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Civil Engineering

HAZARDOUS MATERIAL EMERGENCY PLANNING AND RESPONSE GUIDE

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This manual provides guidance for establishing the Hazardous Materials (HAZMAT) Emergency Planning and Response Program at Air Force installations to meet Federal, state and local regulatory requirements. It is intended to assist in the implementation of Air Force Instruction (AFI) 32-4002, *Hazardous Materials Emergency Planning and Response Program*, as executed by the major commands. It covers HAZMAT emergency planning, hazards analysis, capability assessment, post emergency response, notification, and reporting. It also describes a recommended process for developing an installation-specific Hazardous Material Emergency Planning and Response Plan (HAZMAT Plan). The manual is not intended for direct use by installations in foreign countries, but sections could be adopted to provide guidance for Air Force activities at these locations. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

Integrated installation specific contingency plans advocated in this manual (rather than multiple plans) are not required by Federal regulations. However, the National Response Team (NRT) and agencies responsible for reviewing and approving Federal response plans agree that integrated contingency plans will be acceptable and be the Federally preferred method of response planning, as described in a notice published in the June 5, 1996 *Federal Register*. Developers of state and local hazardous materials emergency response planning requirements are also encouraged to be consistent with this method. The NRT realizes that many existing regulations pertaining to contingency planning require review by a specific agency to determine compliance with applicable requirements. It is not the intent of the NRT to modify existing agency review procedures or to supersede the requirements of a regulation. Therefore, installations must keep in mind that Federal, state, and local regulatory authorities may still require non-integrated, or multiple contingency plans. In addition, installations are encouraged to coordinate the development of their integrated HAZMAT Plans with relevant state and local agencies to ensure compliance with any additional regulatory requirements.

Chapter 1

INTRODUCTION

1.1. Purpose.

1.1.1. This *Hazardous Material Emergency Planning and Response Guide* (referred to as the Guide) provides process and procedures for implementing HAZMAT[1] emergency planning and response requirements contained in AFI 32-4002, *Hazardous Materials Emergency Planning and Response Program*, and provides guidance on how to prepare an installation-specific, comprehensive HAZMAT appendix to Annex A of Base OPlan 32-1 or an all-encompassing HAZMAT Plan[2]. The installation Environmental Protection Committee should review and apply these procedures in light of processes and chemicals used on the installation.

1.1.2. The base OPlan 32-1 or HAZMAT Plan and appendices, in combination with the Hazardous Waste Management Plan provides a complete Air Force management structure for preventing and responding to releases of hazardous materials.

1.1.3. This Guide, along with AFI 32-4002, provides a framework for consolidating Federal regulatory requirements. Some of the prevalent laws and Presidential Executive Orders influencing HAZMAT emergency and response include the following:

- Resource Conservation and Recovery Act (RCRA)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Clean Air Act Amendments (CAAA) of 1990
- Federal Water Pollution Control Act of 1972, also known as Clean Water Act (CWA)
- Oil Pollution Act of 1990 (OPA)
- Occupational Safety and Health Act (OSHA)
- Federal Facilities Compliance Act (FFCA) of 1992
- Hazardous Materials Transportation Uniform Safety Act (HMTUSA) of 1990
- Toxic Substances Control Act (TSCA) of 1976
- Pollution Prevention Act (PPA) of 1990

1.2. HAZMAT Emergency Planning and Response Program Objectives. Through careful use of this Guide, each Air Force installation will be able to develop and maintain a HAZMAT Emergency Planning and Response Program which fulfills the following:

1.2.1. Protects the environment and public health while providing worker safety.

1.2.2. Consolidates and simplifies environmental requirements while maintaining environmental compliance.

1.2.3. Keeps regulatory agencies and local communities informed.

1.3. HAZMAT Guide. This Guide provides a chapter-by-chapter guideline to develop an installation-specific HAZMAT Plan. It is designed to be used by an Air Force installation HAZMAT emergency planning team. The planning requirements should be developed while the HAZMAT emergency planning team reviews applicable Federal, state, and local laws and regulations (refer to AFI 32-4002) to identify all HAZMAT planning requirements. Most procedural chapters in this Guide conclude with a tabular summary of the pertinent Federal requirements discussed in that chapter. The summary includes the required element and the corresponding Code of Federal Regulation (CFR) citation, for convenient user reference. Each paragraph which explains a specific requirement will also contain the appropriate CFR citation in [brackets] at the end of the paragraph. The chapters provide information to:

1.3.1. Form and organize a HAZMAT emergency planning team (Chapter 2)

1.3.2. Provide a three step decision making process (Chapter 3)

1.3.3. Identify all HAZMAT above the screening level (Chapter 4)

1.3.4. Identify vulnerability zones for populations, critical missions, environmentally sensitive areas, and property (Chapter 5)

1.3.5. Analyze risk to populations, critical missions, environmentally sensitive areas, and property within vulnerability zones (Chapter 6)

1.3.6. Assess the installation, community and industrial capabilities for HAZMAT response, containment, cleanup and restoration (Chapter 7)

1.3.7. Establish/enhance post-emergency response functions (Chapter 8)

1.3.8. Develop release notification and reporting procedures (Chapter 9)

1.3.9. Develop, validate/update installation HAZMAT Plan and OPlan 32-1 (Chapter 10)

1.3.10. If users are unfamiliar with any of the terms or acronyms in this Guide, they should refer to Sections B and C of attachment 1 for clarification. Users should also review certain sections of several Federal publications, such as the *Hazardous Materials Emergency Planning Guide (NRT-1), or the Technical Guidance for Hazards Analysis.*

NOTES:

[1]Throughout this Guide, the term HAZMAT refers to all hazardous materials/substances/chemicals, regulated substances, petroleum products, and other toxic chemicals including hazardous wastes as defined by various regulatory agencies.

[2]For the purpose of this document, the plan refers to either a HAZMAT appendix to Annex A of Base OPlan 32-1 or, if used, an installation specific HAZMAT Plan.

Chapter 2

THE HAZARDOUS MATERIAL EMERGENCY PLANNING TEAM

2.1. Team Concept.

2.1.1. The team approach is the best vehicle for incorporating the expertise of a variety of sources into the planning process and for producing an accurate and complete HAZMAT Plan. The team approach also ensures a planning process that reflects the consensus of the entire installation and meets Federal requirements.

2.1.2. Each major installation forms a HAZMAT emergency planning team. The team ensures HAZMAT emergency planning is accomplished in accordance with AFI 32-4002, that the installation HAZMAT emergency response plan is exercised accordingly, and that all preventive and corrective response measures are addressed. AFI 32-4002 lists the members that make-up the HAZMAT emergency planning team. Each team member should have at least preliminary decision-making authority for their organization. This allows the HAZMAT planning team to make those decisions required to develop the plan without constant review. All organizational managers must be involved in the plan validation process.

2.1.2.1. The installation commander selects a HAZMAT emergency program manager; this is normally the Civil Engineer Readiness Flight Chief. The HAZMAT emergency program manager is responsible for integrating the HAZMAT emergency planning and response requirements into the framework of the existing installation emergency response network. The hazardous material (HAZMAT) emergency program manager's job is to facilitate HAZMAT emergency planning team meetings, assign plan preparation taskings, ensure total integration of all organizations and activities into the HAZMAT Plan, and supervise the plan validation and review process.

2.1.2.2. All organizations that use hazardous materials should be actively involved in the HAZMAT planning process. If the installation has instituted the Hazardous Materials Pharmacy (HMP) concept, it may provide a centralized source of information on the management of HAZMATs. The data in the HMP may be maintained in a centralized database with input from organizations using hazardous materials on the installation. AFI 32-4002 identifies organizations that have potential roles or provide advisory guidance during a HAZMAT emergency response. They should be involved in the planning process when their specific issues are addressed.

2.1.2.3. If required to meet the process safety management or risk management programs for certain processes on the installation (water or wastewater treatment, or ammonia refrigeration systems), the HAZMAT emergency planning team should include members who are experienced in process engineering and operations. One member of the HAZMAT emergency planning team should have experience and knowledge specific to the process being evaluated. Also, one member of the team should be knowledgeable in process hazard analysis methodologies. See attachment 2, for further information on hazard analysis methodologies [29 CFR Part 1910.119(e)(2) and 40 CFR Part 68.24(f)].

2.1.2.4. The HAZMAT emergency planning team should be a working group under the installation Environmental Protection Committee (EPC); however, other established installation working groups may assume HAZMAT planning responsibilities when the required team members are included. At least annually, the HAZMAT emergency planning team will brief the EPC. The EPC reviews the

installation's program in terms of meeting the Air Force HAZMAT emergency planning objectives in AFI 32-4002 and ensuring local, state, and Federal compliance.

2.2. Local Emergency Planning Committee (LEPC) or Area Contingency Plan (ACP) Representation.

2.2.1. All Federal facilities are required to comply with EPCRA requirements. The HAZMAT program manager represents the installation at local LEPC or ACP meetings (if applicable). In order to comply with the EPCRA, OPA, and US Coast Guard provisions, each installation should:

- Identify Extremely Hazardous Substances (EHS) at or above the Threshold Planning Quantity (TPQ) to the LEPC and State Emergency Response Commission (SERC) [40 CFR Part 355.30(b)]
- Inform the LEPCs of any changes relevant to emergency planning [40 CFR Part 355.30(d)(1)]
- Report to LEPC requests for installation emergency response planning and notification information [40 CFR Part 355.30(d)
- Provide immediate notification to the affected LEPCs and SERCs or designated POCs when an accidental release at or above the reportable quantity (RQ) results in exposure to persons outside of the installation's boundaries, and provide written follow-up [40 CFR Part 355.40]
- Provide Material Safety Data Sheets (MSDSs) or list of MSDSs (grouped by hazard category) for each hazardous chemical above the specified threshold quantity to the LEPCs, SERCs, and fire department having jurisdiction [40 CFR Part 370.21]
- Provide revised MSDSs or listing within 3 months of addition or change to the LEPCs, SERCs, and fire department having jurisdiction [40 CFR Part 370.21]
- Submit annual Tier I or Tier II information by 1 March of each calendar year to the LEPCs, SERCs, and fire department having jurisdiction [40 CFR Part 370.25]
- Provide MSDSs or Tier II information when properly requested [30 CFR Part 370.30]
- Ensure HAZMAT Plan is consistent with the requirements of the National Contingency Plan (NCP) and applicable ACP [33 CFR Part 154.1030(f), and 40 CFR Part 112.20(g)(1)]
- When required, submit the HAZMAT Plan with appropriate cross-reference to the elements listed in 40 CFR Part 112.20(h), to the appropriate Environmental Protection Agency (EPA) Regional Administrator for approval, and provide copies of HAZMAT Plan to the LEPC and SERC when requested [40 CFR Part 112.20(a) and (h)]
- When required to meet Facility Response Plan requirements for marine terminals (fuel being transferred from ships or barges), submit the HAZMAT Plan with appropriate cross-reference to the elements listed in 33 CFR Part 154.1030(e), and to the appropriate Captain of the Port for approval; [33 CFR Part 154.1017 and 154.1030(e)]

2.2.2. Installations having no EHSs or EHSs below their applicable TPQs are not required to participate in LEPCs. However, they should still participate in LEPC meetings to assess any impact the surrounding community may have on installation HAZMAT planning and response procedures, and to provide base information and participation in joint response planning sessions and exercise scenarios.

2.2.3. Unclassified HAZMAT planning and response plan updates should be exchanged with the LEPCs. Such changes include, but are not limited to, changes in personnel assigned as the installation

HAZMAT planning and response program manager, significant change in the amounts of EHSs or other HAZMATs present on the installation, or changes in response capability.

2.3. Consolidated Plan.

2.3.1. Following the HAZMAT Guide layout found in paragraph 1.3, the HAZMAT planning team will develop a comprehensive HAZMAT Plan or HAZMAT appendix to Annex A of Base OPlan 32-1.

2.3.2. The HAZMAT planning team must review applicable Federal, state, and local laws and regulations to identify all HAZMAT planning requirements. It is recommended that several of the earlier planning sessions be dedicated to educating all core members of the HAZMAT planning team in the applicable laws and regulations. The installation legal office should be involved in the education program. HAZMAT planning team members should be reviewing the applicable laws and regulations on a constant basis for changes which impact the installation's HAZMAT Plan. As a minimum, all Federal, state, and local laws should be reviewed at least annually. To ensure compliance, appropriate Federal, state, and local regulatory agencies should be contacted on a regular basis for information on actual and proposed changes to applicable laws, regulations, and guidance.

2.3.3. All existing plans and procedures dealing with the HAZMAT prevention and response must be reviewed and appropriate sections incorporated into the HAZMAT Plan. The goal of the HAZMAT Plan is to consolidate and simplify the prevention and response process for installation personnel. The HAZMAT Plan must be a useable document, easily understood by all persons involved, which incorporates all required compliance requirements, without unnecessary reiteration. Some of the plans include:

- SPCC/Facility Response Plan (40 CFR Part 112)
- Marine Transportation-Related Facility Response Plan (33 CFR Part 154)
- Hazardous Waste Management Plan (40 CFR Part 262/264/265)
- Emergency Response Plan for meeting Process Safety Management Program for Highly Hazardous Chemicals requirements (29 CFR Part 1910.119)
- Risk Management Plan for Chemical Accident Release Prevention (40 CFR Part 68))
- Chemical Hygiene Plan (29 CFR Part 1910.1450)
- Confined Space Plan (29 CFR Part 1910.146)
- Emergency Response Plan (29 CFR 1910.120)
- Emergency Planning and Community Right-to-Know Act Plan (SARA Title III)
- Storm Water Pollution Prevention Plan (NPDES Permit)
- Bulk Oil Response Plan (49 CFR Part 130)
- Response Plan for Onshore Oil Pipelines (49 CFR Part 194)

Chapter 3

HAZARDS ANALYSIS PROCESS

3.1. Introduction. Hazards analysis is a three step decision-making process of collecting and analyzing information on potential HAZMAT releases. It is used to obtain a clear understanding of what hazards exist and the risk posed to people, property, missions, and the environment. The information developed in a hazards analysis provides the basis for notification and reporting requirements, establishes subsequent planning priorities, and provides the documentation to support HAZMAT planning and response efforts. Many elements of a risk management program come from or are revised based on the results of hazards analysis. There are three key components associated with hazards analysis (See Table 3.1.).

3.1.1. First Step - Hazard Identification. The primary component in hazards analysis which identifies hazardous materials at specific locations or throughout the installation that are at or above the screening levels and the release prevention measures in effect at each location. Chapter 4 will discuss this component of hazards analysis.

3.1.2. Second Step - Vulnerability Analysis. An assessment of areas potentially affected by the release of a hazardous material. It includes gathering information on the extent of the vulnerable zone, conditions that influence the zone, size and type of population within the zone, property that might be damaged, and the environment that might be affected. Vulnerability analysis will be discussed in Chapter 5.

3.1.3. Third Step - Risk Analysis. An assessment of the likelihood of an accidental release of a hazardous material and the consequences that might result based on the estimated vulnerable zones. Risk analysis is based on the history of previous incidents at the installation, mathematical modeling, and the best available information. Risk analysis will be discussed in Chapter 6 of this guide.

Table 3.1. Hazards Analysis Process.

HAZARD IDENTIFICATION	VULNERABILITY ANALYSIS	RISK ANALYSIS
Chemical Identity	Vulnerable Zone	Likelihood of a Release Occurring
Location	Human Populations	Severity of the Consequences
Quantity	Critical Facilities	
Nature of Hazard	Environment	

3.2. Resources. Developing a complete hazards analysis that examines all hazards, vulnerabilities, and risks may not be practical. The HAZMAT emergency planning team should determine the level of thoroughness needed. However, at a minimum, the Federal, state, and local regulatory requirements for planning, which include hazards analysis, notification and reporting, should be met. Resources should be concentrated on those situations which present the greatest potential risk or those situations most likely to occur. To conduct the hazards analysis, the priorities should be based on the most hazardous process and HAZMAT locations where the degree of hazard is high for potential off-site consequences, the history of previous releases, and the condition of related equipment and facilities involved in the process. Resources need to be concentrated on these locations as well as locations where release prevention measures are deficient, or other areas that represent a “weak link” in the installation’s emergency program.

Chapter 4

HAZARDS IDENTIFICATION

4.1. Step 1 of the Hazards Analysis Process.

4.1.1. Hazards identification is the first step and most critical part of the hazards analysis process. When this step is complete, hazards identification provides information on facility and transportation situations that have the potential for causing injury to life, mission degradation, or damage to property and the environment due to a HAZMAT release. The hazards identification step involves two substeps: data collection and data evaluation. Section 4.1.2 will describe data collection and Section 4.1.3 will describe data evaluation[3].

4.1.2. Data collection involves conducting the initial screening and collecting and documenting specific HAZMAT information. If the installation has instituted the Hazardous Materials Pharmacy (HMP) concept, it may provide a centralized source of information on management of hazardous materials. The data in the HMP may be maintained in a centralized database with input from organizations using hazardous materials on the installation. Users of centralized installation HAZMAT databanks such as the HMP must play a role in documenting and providing HAZMAT information.

4.1.2.1. During the initial screening, a list should be compiled that identifies all installation HAZMATs. In addition to the HMP, additional data collection sources for HAZMAT list compilation are located in Table 4.1. The completed list is then used to further collect and document specific HAZMAT information. Table 4.2. provides a list of raw data to be collected and maintained in a database. Table 4.3. has been included for data collection pertaining to safety concerns of HAZMATs involved in any activity involving a highly hazardous chemical. This activity includes any use, storage, manufacturing, handling, or the on-site involvement of these chemicals (29 CFR Part 1910.119(b)). The collected information should then be evaluated to determine if the required process safety information for that specific process is available.

4.1.2.2. Information should be collected for each hazardous material at each location. Personnel should be interviewed to obtain any remaining information and to confirm the list. The collected information is used during vulnerability and risk analysis and to perform a capability assessment. Any deficiencies identified by this evaluation should be incorporated into a report. The report should describe the nature of the deficiency; the impact of the deficiency in the event of a spill/release; a recommended corrective action and if the deficiencies are the result of failing to comply with an existing regulation, a proposed regulation, or poor engineering practice. The report should be presented to the EPC for review and corrective action programmed and initiated as soon as possible.

4.1.2.3. Once all required HAZMAT locations have been visited, all HAZMATs with the same Chemical Abstract Service (CAS) number (whether pure or a component in a mixture) should be added up and compared against the appropriate EPA chemical list to see if specific threshold quantities have been met or exceeded for specific notification and reporting requirements (see figure 4.1.). The consolidation of each chemical used on the installation can be accomplished by listing the grand totals from information similar to what is shown in Figure 4.2., with instructions listed in table 4.4. A composite HAZMAT list identifying the applicable Federal requirements similar to table 4.2. will help the HAZMAT emergency planning team ensure the requirements are properly met.

4.1.2.4. There are several computer software programs which can assist an installation in identifying their HAZMATs (chemical inventories and Tier II reporting), completing their hazards analysis (plume or oil spill modeling), resource management, and assisting emergency management. The HAZMAT emergency planning team should compare the software capabilities against the required information for hazards identification, vulnerability analysis, risk analysis, capabilities assessment, and plan development to ensure the software enhances the HAZMAT emergency planning team's capabilities. Existing Air Force software programs including the Environmental Management Information System (EMIS) and Emergency Information Systems (EIS) can be used to assist in the identification process.

Table 4.1. Data Collection Identity Source List.

Compile a preliminary list of all HAZMAT known to be on base. Sources for this information include: - Bioenvironmental HAZMAT Inventory, AF Form 2761 for all base industrial activities. - Reviewing MSDS files kept at work sites for hazard communication requirements. - A compiled one year inventory of M-15 reports (Issue Exception Code (IEX) 8 and 9 issues) obtained from base supply. - Reviewing the hazardous waste inventory and waste analysis plan within the hazardous waste management plan and permit forms for hazardous waste locations (initial accumulation points, accumulation sites, and any permitted facilities). - The hazardous waste management files at bioenvironmental engineering, civil engineer environmental flight, at each generating activity, and at permitted storage facility. - EPCRA reporting documents (Tier 1 and Tier 2). - Pest Management Plan (DD Form 1532) identifying location and quantities of EPA regulated herbicides, pesticides and related chemicals. (Ensure pesticides and herbicides used at the golf course are identified.) - AAFES and Commissary records for locations and quantities of HAZMAT, including NAF records. - Civil Engineer records of potential polychlorinated biphenyls (PCBs) and PCB-contaminated fluids. - Reviewing fire protection flight pre-plans of facilities storing HAZMAT.

- Reviewing existing HAZMAT prevention and response plans (Spill Prevention, Control and Countermeasures (SPCC), Oil and Hazardous Substance Pollution Contingency Plan (OHSPC), Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, Stormwater Pollution Prevention Plan (SWP3), etc.).Reviewing recent pollution prevention opportunity assessments.
- Obtaining and reviewing a copy of DoD Hazardous Materials Information System (HMIS) and the Coast Guard Chemical Hazard Response Information System (CHRIS) manuals.
- Obtaining a copy of and reviewing installation master plan maps (i.e. liquid fuels systems map, hazardous spill prevention maps, storm drainage system maps, floodplain maps, and base grid maps).
- Interviewing fuels management, supply and civil engineer personnel and reviewing the delivery designation list (M-24) to determine transportation routes and storage location.
- HAZMAT Pharmacy Inventory.
- Reviewing data from HAZMAT computer tracking systems (HM/P2, AF-EMIS, EIS, etc.) at the HMP, CE Readiness Flights, etc.
- Conducting a visual inspection of installation facilities, giving particular attention to materials that are normally considered non-hazardous but might be included because of the quantities present and potential spill impact.
- Reviewing contractor operations.

Table 4.2. Hazardous Materials Database Information and Instructions.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
1	HAZMAT Emergency Planning Team Member	Installation: Evaluator/Organization Date Completed Date of Review	Identify person and organization who initially collected the information. Provide dates to help with reviews and updates.
2	Site Visit	Point of Contact/ Organization/Phone:	Identify person responsible for the HAZMAT at location, their organization, and telephone number.
3	Grid Map	Facility Number/Address Grid Coordinates BES Workplace Identifier # (WPID)	Identify HAZMAT location by facility number/address, base disaster grid map coordinates, and BES workplace identification number (WPID).
4	Site Visit and Pre-plans	Occupancy of Facility: Number: Day: Number: Night:	Identify type of facility (i.e. warehouse, school, etc.) and number of occupants during daytime and at night.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
5	Site Visit,. MSDS, and Existing Plans	Hazardous Material (Chemical Name or Trade Name): Is it Pure? Chemical Abstract Service (CAS) Number: National Stock Number:	Indicate hazardous material present by chemical name and/or trade name. *It is extremely important to obtain the exact spelling of the hazardous material*. Indicate if the hazardous material is in its pure form (not a mixture). Indicate the Chemical Abstract Service (CAS) number.
6	MSDS	Hazardous Component of Mixture CAS # Percentages	If the hazardous material is a mixture, identify its hazardous components listed on the MSDS, their CAS number, and the component's percentage (%) by weight in the mixture.
7	MSDS or Appropriate Chemical RQ/ TPQ/TQ List	CERCLA RQ in lbs (40 CFR 302): EHS TPQ in lbs (40 CFR 355): UN/NA # (Proposed rule in 49 CFR 172.101): PSM TQ in lbs (29 CFR 1910.119): EPCRA TQ in lbs (40 CFR 370): RMP TQ in lbs (40 CFR 68): CAA RQ in lbs (40 CFR 112):	List the CERCLA reportable quantity, the CAA RQ (RQs are published, but the associated risk management regulation has not been promulgated), the EHS threshold planning quantity, the PSM threshold quantity, and RMP threshold quantity, if applicable, and the United Nations or North American Identification Number.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
8	MSDS or HAZMAT Reference Source	List the OSHA Hazard Categories: Fire Sudden Pressure Release Reactive Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Identify the NFPA Marking System: Health Fire Reactivity Other	Identify the potential hazards of the HAZMAT: fire, sudden pressure release, reactive, acute health hazard, and/or chronic health hazard. (*See Section C of Attachment 1 for definitions.*) Identify the National Fire Protection Association (NFPA) ratings for health, fire, reactivity, and other hazards. Ratings go from 0 to 4 with 0 being no hazard and 4 being extreme hazard. (*See NFPA Standard 704 for further information.*)
9	MSDS or HAZMAT Reference Source	What are the important physical characteristics? mixes with water specific gravity floats on water sinks in water vapor density lighter than air heavier than air	Identify important physical characteristics which help define the HAZMAT's behavior when released: vapor density, specific gravity, water solubility, etc. HAZMATs with a specific gravity less than one (< 1) will float on water; greater than one (> 1) will sink. HAZMATs with a vapor density < 1 will rise and be found at upper levels in confined areas. HAZMATs with a vapor density > 1 will sink and can be found at ground and below ground level; and will flow along depressions in the ground.
10	Site Visit and Record Search	Has there been any releases within the past 12 months? If yes, list date(s):	Identify through interviews or reports whether there has been a release of the HAZMAT over the last 12 months. Indicate date and known information about the release(s). For oils, identify whether there has been a spill of 10,000 gallons or greater within the last 5 years.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
11	Site Visit	Site Description: Container Type (Tank, Drum, Pipe, Etc.): Container Construction Material: Container Quantity (in gal or lb): Frequency container(s) changed/filled: Number of Containers: Container Location within Facility: Warning(s)/Label(s) designating hazards: Container is: - a confined space - a permit-required confined space. Container(s) is/are located in: - a confined space - a permit-required confined space	Provide a site description for each HAZMAT storage location to include: container type, container's material of construction, container quantity (gallons and pounds), number of containers, frequency containers are changed or filled, and container location within or outside the facility. Storage of small quantities of HAZMAT below their RQs would not be addressed in this description, but may need to be identified for reporting the total installation's quantity for EHS TPQs or EPCRA TQs. Identify whether the container or the location where the container is located is classified a confined space and a permit-required confined space per OSHA 29 CFR 1910.146.
12	Site Visit and Drawings	Quantities: Max. Quantity Present: (in gal or lb) Average Daily Quantity: (in gal or lb) Quantity Used During Last Calendar Year: (in gal or lb) Normal pipeline/container pressure (if applicable): (psi)	Estimate maximum quantity (gallons and/or pounds) which can be stored/used at the site and the average quantity normally present. Estimate the total quantity used in the last calendar year. If pipeline or pressure vessel, include normal pressure (psi). Estimates are used to help identify the maximum worst-case and most likely release quantities.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
13	Site Visit	Identify Source: Who/how HAZMAT is delivered? Frequency of Delivery: Estimated Storage Time: How HAZMAT is used? How is HAZMAT disposed? Waste Stream #:	Identify life-cycle of the HAZMAT. How is it procured? How is it delivered and how often? How is it stored and how long is it stored? How is it used? How is it disposed of? Identify waste stream number if hazardous waste is generated.
14	Maps - Installation - Local - Maps - Regional - Topographic Site Drawings	Probable Spill Route: What is the probable spill route? Flow to oil water separator? (yes or no) Oil water separator kept open or closed? Discharge to sanitary or storm sewer? (yes or no and distance) Distance through storm sewer drain opening to navigable water: Environmentally sensitive areas in flow path? (yes or no and distance) Navigable waters in flow path? (yes or no and distance) Drinking water intakes in flow path? (yes or no distance) Adjacent Ground Cover: (sand, porous earth, clay, grass, concrete, asphalt)	Identify probable spill route for liquids. Identify inlets into a sanitary sewer or stormwater system (including open drainage ditches). Identify any oil/water separators and containment systems along the flow path. Identify if the oil/water separator is normally kept open or closed. Identify adjacent ground cover (sandy, clay, porous earth, grass, concrete, or asphalt). Identify navigable waters along the flow path. Identify distance between storm drain opening and navigable water. Identify any environmentally sensitive areas along the flow path and its distance downstream from the release point. Identify any drinking water intakes along the flow path and its distance downstream from the release point. Mark spill route on map.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
15	See Attachment 4 Site Visit and Engineering Plans	Secondary Containment (if applicable yes or no) Dike Material: Dike Floor Material: Is dike floor and walls impervious to leaks for at least 72 hours? (yes or no) Dike Height: (ft) Dike Area: (total sq ft) Dike Volume: (gal) Dike drains kept: (open or closed)	Identify all secondary containment systems present. For dikes, include area, height, and volume from engineering drawings. Note the construction materials for dike walls and floors and whether they will hold the HAZMAT for at least 72 hours. Identify condition of containment system, such as cracks or other openings. Identify dike drainage valves, where the dike discharge will flow, and whether the drain valves are normally kept open or closed.
16	Site Visit and Drawings	Other Secondary Containment: (yes or no) booms, berms curbing, culverts gutters, weirs retaining walls, spill pallet spill diversion ponds retention ponds absorbent materials storage building with spill containment other (specify):	Identify other types of containment, such as booms, berms, retaining walls, curbing, gutters, weirs, spill diversion ponds, retention ponds, absorbent materials, spill pallets, storage buildings with secondary containment, or other methods to confine a spill or release.
17	Site Visit	Possible Improvements: List improvements	Identify any deficiencies or improvements needed in the secondary containment structures, oil/water separators, etc.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
18	Site Visit and Inspection Logs	Visual Inspections: Are there written procedures for checking secondary containment precipitation water for contaminants prior to release and are they followed? (yes or no) Dates of Last 3 External Inspections: Dates of Last 3 Internal Inspections	Identify when last three visual inspections outside the container and inside the container have been conducted. Identify any evidence or previous spills or other conditions which could result in a spill or release. Identify written procedures for checking the precipitation inside secondary containment areas for contaminants before releasing the water; and the procedures for removing the contaminants from the water.
19	Site Visit and Preventive Maintenance Records	Preventative Maintenance (Procedures/Frequency): List procedures and frequencies	Identify preventive maintenance procedures. Reviews records and maintenance. Civil engineer should have storage tanks in their Recurring Maintenance Program. If there is an oil/water separator, check for written procedures for monitoring and maintaining the system.
20	Site Visit and Preventive Maintenance Records	Leak Testing (date/results):	ASTs require periodic integrity testing. Pressure piping requires annual pressure testing. USTs have specific monitoring and testing procedures.
21	Site Visit and Inspection Records	Housekeeping: Aisle Space Maintained? (yes or no) Area Kept Clean? (yes or no) Is HAZMAT properly stored? (yes or no) Are there storage compatibility problems? (yes or no) Other comments:	Identify housekeeping practices (area clean, adequate aisleways maintained, HAZMAT storage compatibility, excess of HAZMAT stored, etc.). Identify if incompatible materials could mix.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
22	Site Visit and Engineering Specs	Material Compatibility: Inner liner or protective coating is made from? Is inner liner/protective coating compatible with the HAZMAT? (yes or no) Is cathodic protection installed? (yes or no) Is cathodic protection functional and properly maintained? (yes or no)	Determine if HAZMAT is compatible with the materials used to construct transportation and storage containers (inner liners and outer shells of container). Determine if containers are compatible with local environment (cathodic protection).
23	Site Visit	Security: Fences and locked gates? (yes or no) Traffic barriers? (yes or no) Locked valves and pump controls? (yes or no) Lighting? (yes or no) Other:	Identify security at HAZMAT locations: fences and gates, traffic barriers, locked valves and pump controls, lighting, locked cabinets, or other).
24	Site Visit and Engineering Plans	Monitoring (specify type/ interlocks): Liquid level? (yes or no) Flow meters? (yes or no) Flow totalizers? (yes or no) Material inventory? (yes or no) Ground water (for underground sites)? (yes or no) Other:	Document equipment monitoring techniques used to observe operational conditions at HAZMAT locations: liquid level gauges and alarms, flow meters, flow totalizers, material inventory, ground water monitoring, or other.
25	Site Visit and Records Review	Detailed Visual Inspection: Has detailed visual inspection been conducted in the last year? (yes or no) Comments:	Review detailed formal inspection reports. If a detailed inspection has not been accomplished within the last year, contact the environmental manager.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
26	Site Visit and Equipment Lists (in plans)	Emergency Equipment: Is all required emergency equipment available on site? (yes or no) Monitoring and Analysis Equipment: Personal Protective Equipment: Confined Space Rescue Equipment: Release/Spill Control Equipment: Decontamination Equipment: Safety Equipment: Other (specify):	List all spill/release containment equipment by category at the HAZMAT location. A definitive list is required under capability assessment.
27	Site Visit and Training Records	HAZMAT Training: All release/spill prevention and response training received? (yes or no) SPCC/OPA Prevention Training: SPCC/OPA Response Training: HAZWOPER Training: HAZCOM Training: Confined Space Training: DoT Training: Other (specify):	Determine if HAZCOM, prevention and response training has been provided as required for personnel at the HAZMAT location. Check applicable boxes.

Item#	Information-Source	Required Information for your database	Category/Type of Information Required
28	Site Visit	Site Sketch: (Put a site sketch on back); take photographs and log brief description and grid map location of each photograph: Attach copy of MSDS to worksheet:	A rough sketch should be produced when collecting information. The sketch should include the facility, HAZMAT location(s) within the facility, possible spill or release locations, potential spill routes, sanitary sewer and stormwater inlets, secondary containment structures in place, and nearby vulnerable areas. Photos could also be used. Ensure a description is included on the back of each photo. Log grid map location on back of each photo. Attach a copy of the MSDS to the worksheet for completing the hazards analysis and documentation.
29	Site Visit	Summary of Deficiencies: Are there deficiencies which require correction? (yes or no) Are there deficiencies which require immediate correction? (yes or no) List Deficiencies:	Identify all risk management deficiencies which require corrective action (engineering, equipment, training, or procedures) and should be included in the Plan. Identify those deficiencies which require immediate correction.
30	Site Visit, MSDSs, Engineering Drawings, and Specifications, and Maintenance Procedures	Process Safety Information: Is HAZMAT used in a process which meets the Process Safety Management or Risk Management requirements? (See Process Safety Management, 19100.119 and proposed rule.) (yes or no)*If answer is yes, complete additional information in Table 4.3.*	Identify whether HAZMAT is involved in a process required by 29 CFR Part 1910.119 and/or proposed rule in 40 CFR Part 68. If the answer is yes, follow the information in Figure 4.1 to identify whether required process safety information concerning the process is available. Personnel from the HAZMAT process should be involved in the identification.

Table 4.3. Sample Process Safety Information Survey.

1. Has written process safety information been compiled before conducting any process hazard analysis (PHA) [29 CFR Part 1910.119(d) and proposed rule in 40 CFR Part 68.26(a)]?

2. Do the MSDSs pertaining to the HAZMATs used in the process include [29 CFR Part 1910.119(d)(1) and proposed rule in 40 CFR Part 68.26(b)]: - toxicity information? - permissible exposure limits (PELs)? - physical data? - reactivity data? - corrosivity data? - thermal and chemical stability data? - hazardous effects of inadvertent mixing of different materials that is foreseeable?
3. Is information included concerning the technology of the process, and does it include at least[29 CFR 1910.119(d)(2) and proposed rule in 40 CFR Part 68.26(c)]: - a block flow diagram or simplified process flow diagram? - process chemistry? - maximum intended inventory? - safe upper and lower limits (*for temperatures, pressures, flows and compositions*)? - an evaluation of the consequences of deviations (*including those affecting public health and the environment*)?
4. Is information included pertaining to equipment in the process, and does it include at least[29 CFR Part 1910.119(d)(3)(i) and proposed rule in 40 CFR Part 68.26(e)]: - materials of construction? - piping and instrument diagrams (P&ID's)? - electrical classification? - relief system design and design basis? - ventilation system design? - design codes and standards employed? - material and energy balances for processes built after May 26, 1992? - safety systems (e.g. interlocks, detection or suppressions systems)?
5. Has the employer documented that equipment complies with recognized, generally accepted good engineering practices [29 CFR Part 1910.119(d)(3)(ii) and proposed rule in 40 CFR Part 68.26(f)]?
6. Has the employer determined and documented that existing equipment designed and constructed in accordance with codes, standards, or practices no longer in general use are designed, maintained, inspected, tested, and operating in a safe manner [29 CFR Part 1910.119(d)(3)(iii) and proposed rule in 40 CFR Part 68.26(g)]? (Documentation may be through methods such as: documenting successful prior operation procedures; documenting that the equipment is consistent with the appropriate editions of codes and standards; or performing an engineering analysis to determine that the equipment is appropriate for its intended use.)
7. Do observations of a representative sample of process chemicals and equipment indicate that the process information is complete [29 CFR Part 1910.119(d) and proposed rule in 40 CFR Part 68.26(a)]? (Information that does not correspond to the actual conditions demonstrates incomplete information. Check critical equipment and components to see if they have been properly identified.)

8. Do observations of a representative sample of process components indicate that the process complies with recognized and generally accepted good engineering practice[29 CFR Part 1910.119(d) (3)(ii) and proposed rule in 40 CFR Part 68.26(f)]? (Review a representative number of safety devices such as pressure relief devices for proper sizing according to the maximum anticipated pressure.)
9. Do observations of a representative sample of the existing equipment designed and constructed according to codes, standards, or practices no longer in general use indicate that this equipment is inspected and is operated in a safe manner (as documented by the employer) [29 CFR Part 1910.119(d)(3)(iii) and proposed rule in 40 CFR Part 68.26(g)]?
10. Was the process safety information complete before the process hazard analysis was conducted [29 CFR Part 1910.119(d) and proposed rule in 40 CFR Part 68.26(a)]?
11. Is MSDS information readily available to the operators who work with HAZMAT [29 CFR Part 1910.1200]?
12. Does the process equipment comply with recognized and generally accepted good engineering practice [29 CFR Part 1910.119(d)(3)(ii) and proposed rule in 40 CFR Part 68.26(f)]? (Ask about the technical basis for design and selection of equipment, the materials of construction, electrical classifications, relief devices, sizing versus maximum anticipated pressures, installation procedures to assure equipment meets design specifications, etc.)

Figure 4.1. HAZMAT Identification Process and Relationship to Specific Lists.

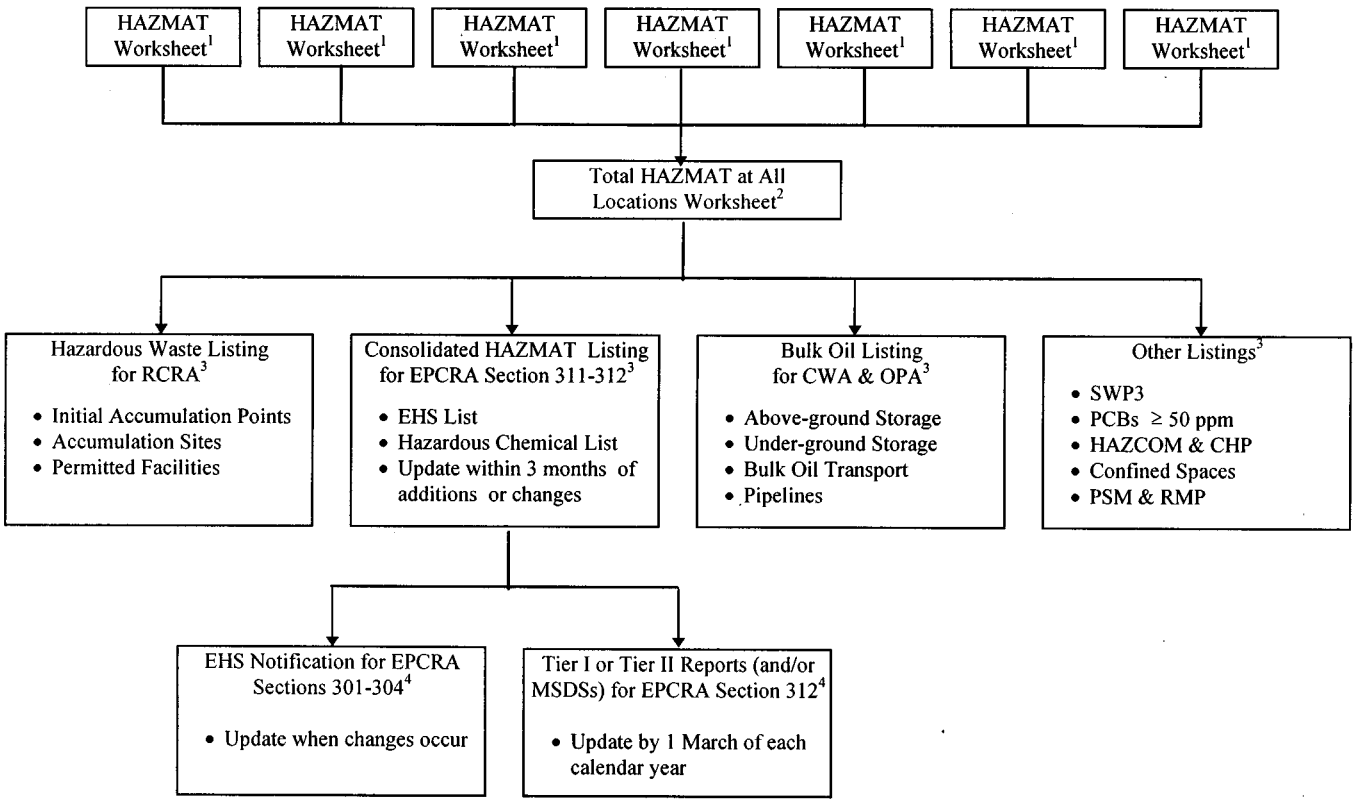
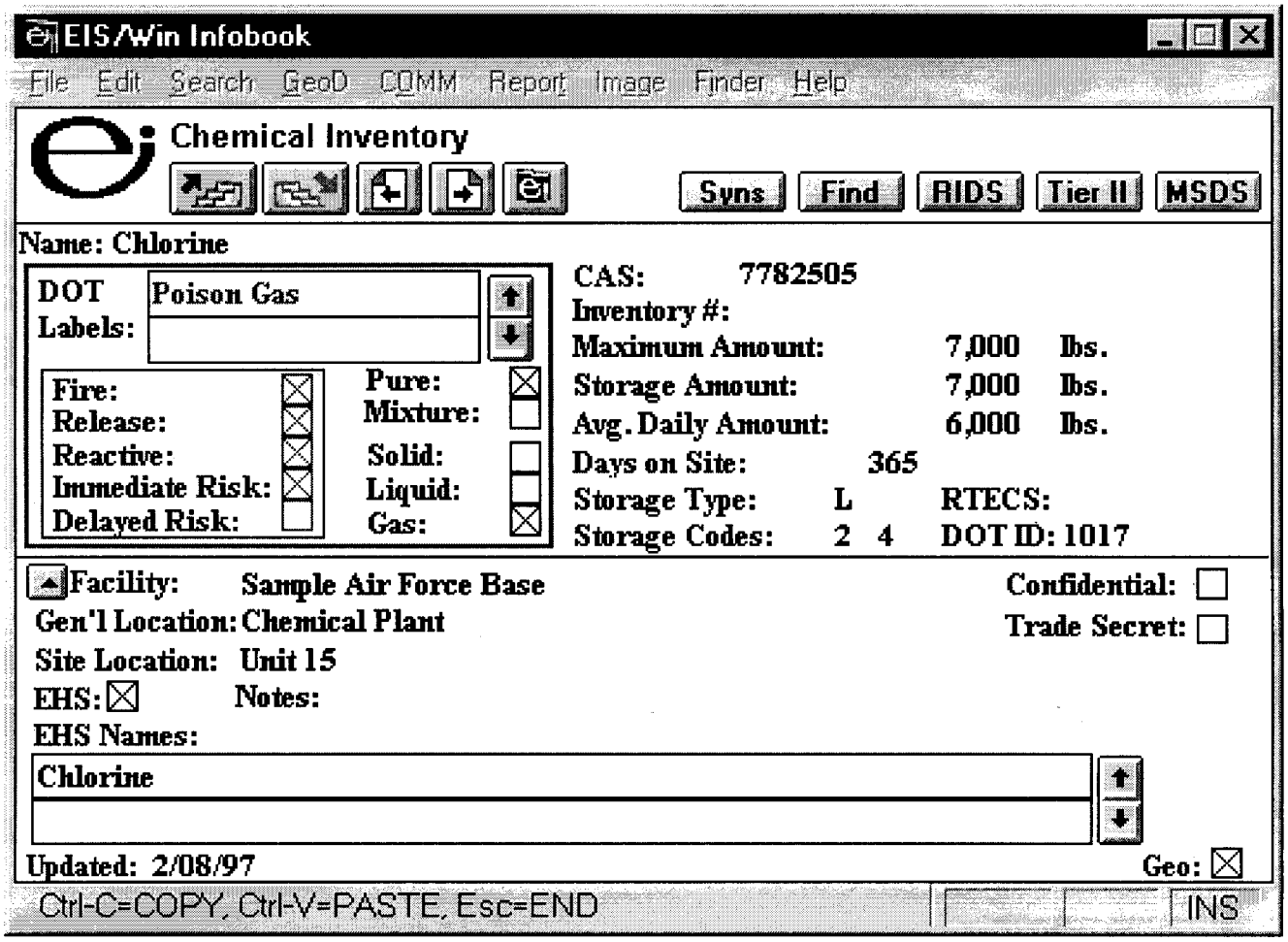


Figure 4.2. Sample Screen from the Emergency Information System (*EIS™) Chemical Inventory Database.



*Reprinted by permission of EIS International Corporation.

Table 4.4. Instructions for Sample HAZMAT Database.

Chemical Name	Identify the hazardous chemical located at multiple locations which are suspected to exceed their threshold quantities and consolidate this data for each chemical.
CAS #	Identify the Chemical Abstract Service (CAS) number for the hazardous chemical.
EHS?	Check **Yes** if the chemical name is an EHS and **No** if it is not an EHS.
TPQ	If it is an EHS, record the Threshold Planning Quantity (TPQ).
Hazard Categories	Check the applicable hazard categories. **F**-fire; **SPR**-sudden pressure release; **R**-reactive; **A**-acute health hazard; and **C**-chronic health hazard. See attachment 1 for more information.
Name	Identify the trade name, mixture name or hazardous chemical name.

Location	Identify the building where the hazardous chemical is located.
Pure	Check if the hazardous chemical is a pure product.
Mixture	Check if the hazardous chemical is a component of a mixture.
%	If the hazardous chemical is a component of a mixture, list the percentage
Avg. lb	For pure chemicals, multiply the weight each container holds times the number of containers found on an average. Calculate the amounts in mixtures by multiplying the percent composition by weight times the weight of the mixture. Then multiple the mixture weight each container holds times the number of containers found on an average basis. Or, as a second option, report the entire weight of the mixture. ***But, you should be consistent in your calculation option.***
Max. lb	For pure chemicals, multiply the weight each container holds times the maximum number of containers which could be found at the location. Calculate the amounts in mixtures by multiplying the percent composition by weight times the weight of the mixture. Then multiple the mixture weight each container holds times the maximum number of containers which could be found at the location. Or, as a second option, report the entire weight of the mixture. ***But, you should be consistent in your calculation option.***
Total of All On-Site Locations	Identify the total pounds of the hazardous chemical either pure or in a mixture.
Reporting Required?	EPCRA Sections 301-303 reporting is required if an EHS is equal to or exceeds the TPQ. (*When chemicals appear on the EHS list with two TPQs, the smaller value only applies to: powdered forms with particle size less than 100 microns; solutions where you count only the chemical in the solution; molten forms; and chemicals meeting the NFPA Standard 704 reactivity rating of 2, 3, or 4.*) Disregard EHS mixtures when the EHS is present in the mixture in amounts below one percent by weight. EPCRA Sections 311 and 312 reporting is required if the total equals or exceeds the following: (1) for EHS, the lessor of 500 pounds or the TPQ; (2) for other hazardous chemicals, 10,000 lb For oils, see *Appendix C to 40 CFR Part 112* to determine reporting requirements.
Page of	If more than one page is needed, number the pages appropriately.

4.1.3. Once the data have been collected and documented, the next step of hazards identification is to evaluate the data to determine what HAZMATs are at or above screening quantity and threshold levels. Those HAZMATs that are identified as at or above screening quantities and threshold levels are then evaluated. Screening quantities refer to specified categories and their related requirements that drive the screening process. Table 4.5. provides the screening quantities of HAZMATs. Many of the screening quantities can be identified through the HMP or existing plans and programs such as:

- Hazard Communication Program (29 CFR 1910.1200)
- SPCC/Facility Response Plan (40 CFR Part 112)
- Hazardous Waste Management Program (RCRA Subtitle C)

But, there are other plans and programs which should also be reviewed. These include:

- Process Safety Management Program for Highly Hazardous Chemicals (29 CFR Part 1910.119)
- Risk Management Programs for Chemical Accident Release Prevention (proposed rule in 40 CFR Part 68)
- Chemical Hygiene Plans (29 CFR Part 1910.1450)
- Confined Space Programs (29 CFR Part 1910.146)
- Emergency Response Plans (29 CFR 1910.120)
- Emergency Planning and Community Right-to-Know Act Plans (40 CFR Part 355)
- Stormwater Pollution Prevention Plans (40 CFR Part 122)
- Underground Storage Tank Program (40 CFR Part 280)
- Oil Spill Emergency Response Plans (49 CFR Part 130), Response Plans for Onshore Oil Pipelines (49 CFR Part 194)
- Programs for TSCA controlled substances such as PCBs or asbestos

Table 4.5. Screening Quantities of HAZMATs.

Category	Screening Quantity
Extremely Hazardous Substances (EPCRA Sections 301-304)	Greater than or equal to TPQ, as listed in 40 CFR Part 355, Appendices A and B. Includes the sum of all containers of a specific EHS.
CERCLA Hazardous Substances (EPCRA Section 304)	Greater than or equal to RQ, as listed in 40 CFR Part 302, Table 302.4. Any total quantity of these substances in both pure form or mixtures.
OSHA Hazardous Chemicals (EPCRA Sections 311-312)	MSDSs must be submitted for all OSHA hazardous chemicals greater than or equal to 10,000 lb, or for EHSs greater than or equal to 500 lb The same quantities apply for the submission of Tier I or Tier II annual chemical inventories (40 CFR Part 370).
Toxic Chemicals (EPCRA Section 313)	Emissions or releases of these chemicals must be reported annually for 25,000 lb of the chemical manufactured or processed at the facility; and 10,000 lb of the chemical otherwise used at the facility (40 CFR Part 372).
Underground Storage Tanks	Tanks containing more than 42,000 gallons of oil.

Category	Screening Quantity
Above-ground Storage Tanks	Tanks containing more than 1,320 gallons or any container with a capacity in excess of 660 gallons of oil.
Hazardous Waste	Any amount.
PCBs	Any quantity of a material containing a concentration of greater than or equal to 50 ppm (State of CA $\geq$ 5 ppm).

4.1.4. Not only are HAZMATs evaluated for screening quantities but also for threshold levels. Threshold levels refer to specific quantities of HAZMATs that trigger emergency planning, notification and reporting requirements to the SERC. Many standards cover the same HAZMAT, but establish different threshold levels for planning and reporting purposes. Those threshold levels can be found in:

- 29 CFR Part 1910.119 (OSHA hazardous chemicals)
- Proposed 40 CFR 68 (list of regulated substances and thresholds for accidental release prevention)
- 40 CFR Part 112 (oil storage quantity and worst-case oil discharge potential)
- 40 CFR Part 261 (characteristic and listed wastes)
- 40 CFR 117 (CWA hazardous substances)
- 40 CFR Part 302 (CERCLA hazardous substances)
- 40 CFR Part 355 (extremely hazardous substances)
- 40 CFR Part 370 (extremely hazardous substances and OSHA hazardous chemicals)
- 40 CFR Part 372 (toxic chemicals), 49 CFR Part 130 (oil quantity transported)
- 49 CFR Part 194 (pipeline size and length and worst-case oil discharge potential)

The EPA publishes a *List of Lists* which consolidates several of the EPA (40 CFR) chemical lists mentioned above in 40 CFR, including SARA Section 302, Extremely Hazardous Substances; CERCLA Hazardous Substances; SARA Section 313 Toxic Chemicals. This list can be obtained free of charge by calling the EPA RCRA, Superfund, and EPCRA Hotline, at 1-800-535-0202. Table 4.6. provides an example of how the quantities of HAZMATs located on an installation are impacted by many Federal requirements if the threshold level is exceeded. For example, if more than 500 pounds of ammonia is located on an installation, then EPCRA and OSHA regulations must be consulted to ensure accurate reporting is accomplished.

Table 4.6. Sample Federal Plan Requirements Impacting the Hazardous Materials Planning Process on an Installation.

HAZMAT		Location	Total Base	Subject to the Following Requirements						
Name	**Location**	**Quantity**	**Quantity**	**PSM**	**CS**	**CHP**	**RMP**	**SPCC**	**FRP**	**SWP3**
Ammonia	CE Drafting Bldg 433	300 lb	600 lb							
Ammonia	Graphics Bldg 2	300 lb	600 lb							
Chlorine	Wastewater Treatment Plant Bldg 16	10,000 lb 5 1-ton containers	10,000 lb	✓ *1,500 lb*			✓ *1,000 lb*			
Fuel Oil #2	UST # 5 Bldg 215	5,000 gal	100,000 gal		✓			✓	✓	✓
JP-8	Fuel Truck Storage Area	50,000 gal 10 5K gal refuelers	5 million gal		✓			✓	✓	✓
JP-8	8” 8-mile pipeline	162,000 gal	5 million gal		✓			✓	✓	✓
JP-8	AST #6 Bldg 33	300,000 gal	5 million gal		✓			✓	✓	✓
PD-680	Corrosion Control Bldg 214	200 gal	3,000 gal							✓
Sulfuric Acid	Corrosion Control Bldg 214	60 gal	250 gal							✓
Sulfur Dioxide	Wastewater Treatment Plant Bldg 16	6,000 lb 3 1-ton containers	6,000 lb	✓ *1,000 lb*			✓ *1,000 lb*			

PSM - Process Safety Management of Highly Hazardous Chemicals (29 CFR Part 1910.119)
CS - Permit-Required Confined Spaces (29 CFR Part 1910.146)
CHP - Chemical Hygiene Plan; Occupational Exposure to Hazardous Chemicals in the Laboratory (29 CFR Part 1910.1450)
RMP - Risk Management Plan; Risk Management Programs for Chemical Accidental Release Prevention (Proposed rule in 40 CFR Part 68)
SPCC - Spill Prevention Control and Countermeasures Plan (including Oil and Hazardous Substance Contingency Plan) (40 CFR Part 112)
FRP - Facility Response Plan (40 CFR Part 112)
SWP3 - Stormwater Pollution Prevention Plan (40 CFR Part 122)

Table 4.7. Sample Federal Plan Requirements Impacting the Hazardous Materials Planning Process on an Installation (Cont).

HAZMAT		Location	Total Base	Subject to the Following Requirements						
Name	**Location**	**Quantity**	**Quantity**	**HWEP***	**HWCP***	**ERP**	**UST**	**EPCRA**	**Bulk Oil**	**Pipeline**
Ammonia	CE Drafting Bldg 433	300 lb	600 lb			✓		✓ *500 lb*		
Ammonia	Graphics Bldg 2	300 lb	600 lb			✓		✓ *500 lb*		
Chlorine	Wastewater Treatment Plant Bldg 16	10,000 lb 5 1-ton containers	10,000 lb			✓		✓ *100 lb*		
Fuel Oil #2	UST # 5 Bldg 215	5,000 gal	100,000 gal	✓	✓	✓	✓	✓ *10,000 lb*		
JP-8	Fuel Truck Storage Area	50,000 gal 10 5K gal refuelers	5 million gal	✓	✓	✓		✓ *10,000 lb*	✓	
JP-8	8” 8-mile pipeline	162,000 gal	5 million gal	✓	✓	✓		✓ *10,000 lb*		✓
JP-8	AST #6 Bldg 33	300,000 gal	5 million gal	✓	✓	✓		✓ *10,000 lb*		
PD-680	Corrosion Control Bldg 214	200 gal	3,000 gal	✓	✓	✓		✓ *10,000 lb*		
Sulfuric Acid	Corrosion Control Bldg 214	60 gal	250 gal	✓	✓	✓		✓ *1,000 lb*		
Sulfur Dioxide	Wastewater Treatment Plant Bldg 16	6,000 lb 3 1-ton containers	6,000 lb			✓		✓ *500 lb*		

HAZMAT		Location	Total Base	Subject to the Following Requirements						
Name	**Location**	**Quantity**	**Quantity**	**HWEP***	**HWCP***	**ERP**	**UST**	**EPCRA**	**Bulk Oil**	**Pipeline**

HWEP* - Hazardous Waste Emergency Procedures (40 CFR Part 262); becomes a waste after release
HWCP* - Hazardous Waste Contingency Plan (40 CFR Part 264/265) becomes a waste after release
ERP - Emergency Response Plan for uncontrolled releases (29 CFR 1910.10)
UST - Under-ground Storage Tanks (40 CFR Part 280)
EPCRA - Extremely Hazardous Substance--Emergency Planning and Community Right-to-Know Act (40 CFR Part 355); Hazardous Chemical Inventory and MSDSs (40 CFR Part 370)
Bulk Oil - Oil Spill Prevention and Response Plans (for bulk transport) (49 CFR Part 130)
Pipeline - Response Plans for Onshore Oil Pipelines (49 CFR Part 194)

4.2. Federal Requirements Summary. Table 4.8. provides a summation of the Federal requirements found in this chapter.

Table 4.8. Chapter 4 - Federal Requirements Summary.

Element	Standard
Process Safety Information	29 CFR 1910.119(d) 40 CFR 68.26
Identify Permit-Required Confined Spaces	29 CFR 1910.146(c)
Description of Oil Storage, Distribution, and Use	33 CFR 154 40 CFR 112.7(a)(3)
Hazard Identification	40 CFR 112.20(h)(4) 40 CFR 112, App G, 1.4.1
SWP3 - Risk Identification and Summary of Potential Pollutant Sources	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.2.e.
SWP3 EPCRA Section 313 Water Priority Chemicals	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.7. and Addendum B
BMP - Examine Facility Components or Systems for Release Potential	40 CFR 125.104(b)(2)(i)
BMP - Material Inventory	40 CFR 125.104(b)(4)(iii)(C)
Identification of Facilities and Extremely Hazardous Substances Transportation Routes	SARA Title III, Sections 301-303 40 CFR 300.215(c)(1)
PCB Locations	40 CFR 761.30 & 40
Identify Bulk Oil Transport Containers and Vehicles	49 CFR 130.31(a)(2)
Identify Oil Pipelines Which Require Response Plans - Incident Information Summary	49 CFR 194.101 & 103 49 CFR 194.107(d)(1)(i) & 113

NOTES:

[3]Several of these steps may correlate to similar efforts conducted by other organizations on base, such as bioenvironmental engineering, safety, and the environmental flight. Utilize existing sources first.

[4]Use HMP sources listed in Table 4.1 to identify locations, and document these materials using the HAZMAT Database Information and Instructions (Table 4.1). If the materials are especially hazardous, follow-up with the Safety Information Survey (Table 4.3.)

[5]Consolidate the information gathered above using the Consolidation Worksheet (Figure 4.2). Instructions for filling out this worksheet are found in Table 4.4.

[6]Apply findings to applicable regulations to meet notification and reporting requirements.

[7]Submit applicable Federal reports and determine state and local reporting requirements.

Chapter 5

VULNERABILITY ANALYSIS/PROCESS HAZARD ANALYSIS

5.1. Step 2 of the Hazards Analysis Process. This chapter covers the topics of vulnerability analysis and process hazard analysis (PHA). Vulnerability analysis is the second step of the hazards analysis process. It is a procedure required under several different Federal regulations, and is described in Section 5.2. PHA is a separate method for evaluating the hazards in certain industrial processes. This analysis type has been included here because it is required under OSHA regulations in 29 CFR Part 1910.119, also called Process Safety Management. PHA is described in Section 5.3. Most vulnerable zone analyses or PHA will concentrate on meeting the Federal requirements for EHSs, highly hazardous chemicals, regulated substances, and oils. Table 5.1. lists those Federal laws/standards that require a vulnerability analysis or PHA as part of an overall hazards analysis. The HAZMAT emergency planning team should review each of the Federal requirements and the corresponding state regulations, identify those which apply, and conduct the vulnerability portion of the hazards analysis process, or PHA to satisfy compliance issues. HAZMAT planning team should also coordinate its efforts with other base organizations or workgroups addressing HAZMAT management. Documentation of vulnerability analysis/PHA is extremely critical.

Table 5.1. Federal Laws/Standards Requiring Vulnerability Analysis as Part of Hazards Analysis.

Law/Standard	Hazardous Material(s) Covered	Requirement
EPCRA Section 303 and 40 CFR Part 300.215	Extremely Hazardous Substances at or above the threshold planning quantity on the installation (total quantity from all locations)	LEPC Emergency Response Plans should include: methods for determining the occurrence of a release and the probable affected area and population. (*Should provide information to LEPC to assist them in developing this plan requirement.*)
29 CFR Part 1910.119(d)(2)	Highly Hazardous Chemical at or above the threshold quantity in the process listed in Appendix A of the standard	Process Safety Management. Information pertaining to the technology of the process shall include an evaluation of the consequences of deviations, including those affecting the safety and health of employees. Requires process hazard analysis (PHA)
29 CFR Part 1910.119(e)(2)	Highly Hazardous Chemical at or above the threshold quantity in the process listed in Appendix A of the standard	Process Safety Management. Requires PHA.
Proposed rule in 40 CFR Part 68.15(a)	Regulated Substance used in the process exceeds the threshold quantity listed at 40 CFR 68.130	Conduct a hazard assessment to evaluate the impact of significant accidental releases on the public health and environment.

Law/Standard	Hazardous Material(s) Covered	Requirement
Proposed rule in 40 CFR Part 68.15(b)	Regulated Substance used in the process exceeds the threshold quantity listed at 40 CFR 68.130	Determine the worst-case release scenario and other more likely significant accidental releases where the regulated substance is stored, used, loaded, and unloaded; and analyze the consequences of such releases.
33 CFR Part 154.1035(b)(2)	Oils (non-persistent or Group I; and persistent, Groups II through V) at a marine transportation-related (MTR) facility (*installations receiving fuel by vessels*)	Describe the volumes of persistent and non-persistent oil groups that would be involved in: the average most probable discharge; maximum most likely discharge; and worst-case discharge.
33 CFR Part 154.1035(b)(4) and Appendix D	Oils (non-persistent or Group I; and persistent, Groups II through V) at a marine transportation-related (MTR) facility (*installations receiving fuel by vessels*)	Identify areas of economic importance and environmentally sensitivity as identified in the applicable Area Contingency Plan (ACP) which are potentially impacted by a worst-case discharge.
40 CFR Part 112.7(b)	Oils (SPCC requirements)	Predict the direction, rate of flow, and total quantity of oil which could be discharged from a facility as a result of each type of major failure
40 CFR Part 112.20(f)(1) and Appendix C	Oils (Facility Response Plan requirements)	Determine if facility could be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines.
40 CFR Part 112.20(g)(4) and Appendix C	Oils (Facility Response Plan requirements)	Identify areas within the facility where discharges could occur and what the potential effects of the discharges would be on the affected environment. To assess the range of areas potentially affected, use the distance calculations from Appendix C.
40 CFR Part 112.20(g)(5)	Oils (Facility Response Plan requirements)	Develop specific planning scenarios for worst-case discharge, maximum most likely discharge, and average most likely discharge.

Law/Standard	Hazardous Material(s) Covered	Requirement
49 CFR Part 130.31(a)(2)	Bulk Oil Transport Response Plans (for packaging of 3,500 gallons or more)	Take into account the maximum discharge of the contents from the packaging (*packaging refers to containers holding the oil*).
49 CFR Part 130.31(b)(4)	Bulk Oil Transport Response Plans (for packaging of 42,000 gallons or more--*usually railcars*)	Identify the maximum extent practicable worst-case discharge (including a discharge resulting from fire or explosion).
49 CFR Part 194.101	Oil Pipeline Response Plan	Determine if pipeline(s) meet(s) requirements for response plan submittal.
49 CFR Part 194.103	Oil Pipeline Response Plan	Determine if pipeline(s) meet(s) significant and substantial harm requirement.
49 CFR Part 194.105	Oil Pipeline Response Plan	Determine worst-case discharge(s) for each applicable pipeline(s).

5.2. Vulnerability Analysis.

5.2.1. The vulnerability analysis is the second step of the three step hazards analysis. Using the data collected during the hazards identification step, vulnerability analysis identifies by zone what populations, facilities and environments on the base and in the adjoining community are susceptible to damage should a HAZMAT release occur.

5.2.2. A vulnerable zone is an estimated geographical area that may be adversely impacted by an airborne HAZMAT or by spills of non oil-related HAZMATs. This category includes gases, liquids, liquids with a high vapor pressure (volatile), or fine particulate matter which can easily become airborne. They are regulated by EPA as EHSs (40 CFR Part 355) or regulated substances (Proposed rule in 40 CFR Part 68), and by OSHA as highly hazardous chemicals (29 CFR Part 1910.119). The variables in estimating the size of vulnerable zones include the following factors: physical characteristics, type of release, quantity and rate of release to air (for air releases), meteorological conditions, and surrounding topography. The quantity that actually becomes airborne, or spilled, and the release rate depends upon: total quantity released, size of opening, physical characteristics (state, boiling point, vaporization rate, etc.), and conditions (e.g. temperature or pressure under which the chemical is stored or handled). The size of an estimated vulnerable zone depends upon the distance the airborne HAZMAT travels before it disperses and is diffused in the air to a concentration below a specific "level of concern" (LOC) for irreversible health effects or death, or significant impact on environmentally sensitive areas and property. (LOC values are included in *Technical Guidance for Hazards Analysis*, and are based on one-tenth of the "Immediately Dangerous to Life and Health (IDLH) exposure value.)

5.2.2.1. General guidelines for conducting a vulnerability analysis for air releases and spills of non oil-related HAZMAT can be found in *NRT - 1* Section 3.3, and in the *Technical Guidance for Hazards Analysis*, Section 2.2. It is recommended that the HAZMAT emergency planning team follow the instructions for conducting a vulnerability analysis as given in the above two documents. Section 3 of the *Technical Guidance for Hazards Analysis* provides written procedures that can be followed to conduct a three-part hazards analysis, including a vulnerability analysis for a specific EHS, as reported by the facility in 40 CFR Part 355. Both air releases and HAZMAT spills of non oil-related

substances are covered in the above-mentioned documents, although the focus is primarily on air releases.

5.2.2.2. Additionally, the *Handbook of Chemical Analysis Procedures*, published by FEMA, U.S. DoT, and U.S. EPA expands upon both the above-mentioned documents by including information for explosive, flammable, reactive and otherwise dangerous chemicals. These documents present additional procedures on how to plan for emergencies due to releases of dangerous chemicals, including an associated computer program, named ARCHIE (Automated Resource for Chemical Hazard Incident Evaluation). ARCHIE is an automated computer model, which accompanies the *Handbook of Chemical Analysis Procedures*, providing several integrated estimating methods that may be used to assess the vapor dispersion, fire, and explosion impacts associated with discharges of HAZMAT into a non-marine environment.

5.2.2.3. The Environmental Management Information System (EMIS) can be used to assist in the execution of the evaluation program. There are additional off-the-shelf computerized aides such as Emergency Information Systems (EIS) to assist in developing planning and tracking requirements. Whatever modeling software is used, the HAZMAT emergency planning team should understand its capabilities, limitations, input information required, built-in assumptions, and modeling output.

5.2.3. Vulnerability Analysis for Spills of Oil-Related Substances. Vulnerability analysis for oil discharges are conducted by evaluating how the substance can be released from its containment system; where it will go and by when; and what potential harm could occur to people, the environment, critical missions and facilities, and property when exposed to the substance. (Note: A complete definition of what substances are considered to be oils is given in 40 CFR Part 109). For these oil-related substances, the physical characteristics of specific gravity (floats or sinks in water) and solubility (mixes with water) play key roles in predicting the travel path. The topography of the potential spill area will affect the size of the vulnerable zone. Liquids are going to flow towards low areas and depressions, right into an installation's stormwater system, sanitary sewer system, and surface waters. Precipitation could cause the potential vulnerable zone area to increase. Passive mitigation systems such as secondary containment, and active mitigation systems involving early detection with immediate procedures to control the release, can make the difference between a minor release and a major disaster. If an oil-related liquid has a high vapor pressure, then the HAZMAT emergency planning team should evaluate for both an air release and spill release.

5.2.3.1. Several required plans exist for users of oil-related substances. However, vulnerability analysis is not required in all cases. Under the Federal Water Pollution Control Act (FWPCA) and the Oil Pollution Act (OPA), Federal facilities which transfer, move, store, and use oil and which have the potential to release oil or hazardous waste to navigable waters (navigable waters can be applied to almost all water sources and channels) are required to prepare a spill prevention control and countermeasures (SPCC) plan. SPCC Plans do not require a vulnerability analysis. But, under OPA, Federal facilities which have the potential to create a substantial harm to the environment are required to develop a facility response plan (FRP) (see figure 5.1.).

5.2.3.2. It is during the vulnerability step of the hazards analysis process when most HAZMAT emergency planning teams will determine if their installation meets the substantial harm criteria for oils and must therefore submit an FRP. If an installation meets the criteria because of its oil storage facilities, marine terminals where fuel is transferred over water, bulk oil transport by highway or rail, or pipelines, then extensive facility response planning requirements should be included in the HAZMAT planning process. Figure 5.1. outlines the criteria for determining whether oil storage

facilities require a facility response plan under 40 CFR Part 112. The HAZMAT emergency planning team should follow the guidance in Attachment C-1 to C-III and Appendix C to 40 CFR Part 112 to determine substantial harm criteria and also to evaluate whether a discharge from the facility could impact fish and wildlife, sensitive environment or operations at a public drinking water intake by calculating a "Planning Distance". Additional guidance is given in 33 CFR Part 154, Subpart F (marine transportation-related facilities); 40 CFR Part 112.20 (fuel storage facilities); 49 CFR Part 130 (bulk oil transport); and 49 CFR Part 194 (pipelines).

5.2.4. The HAZMAT emergency planning team should describe the facility's worst-case discharge, as well as small (average most likely discharge) and medium (maximum most likely discharge) spills, as appropriate. Section C of Attachment 1 to 40 CFR Part 112 defines worst-case, medium, and small discharges. A multi-level planning approach is required because response actions (i.e., necessary response equipment, products, and personnel) are dependent on the magnitude of the spill [Appendix F to 40 CFR Part 112, paragraph 1.5].

5.2.4.1. All complexes (installations with above-ground storage tanks and a marine terminal) are jointly regulated by EPA and USCG. The HAZMAT emergency planning team should compare the worst-case discharge planning volume calculations derived from EPA and USCG methodologies and use whichever volume is greater. This also applies to developing scenarios for medium and small discharges. A worksheet is given in Appendix D to 40 CFR 112 which enables worst case discharge planning volumes to be calculated.

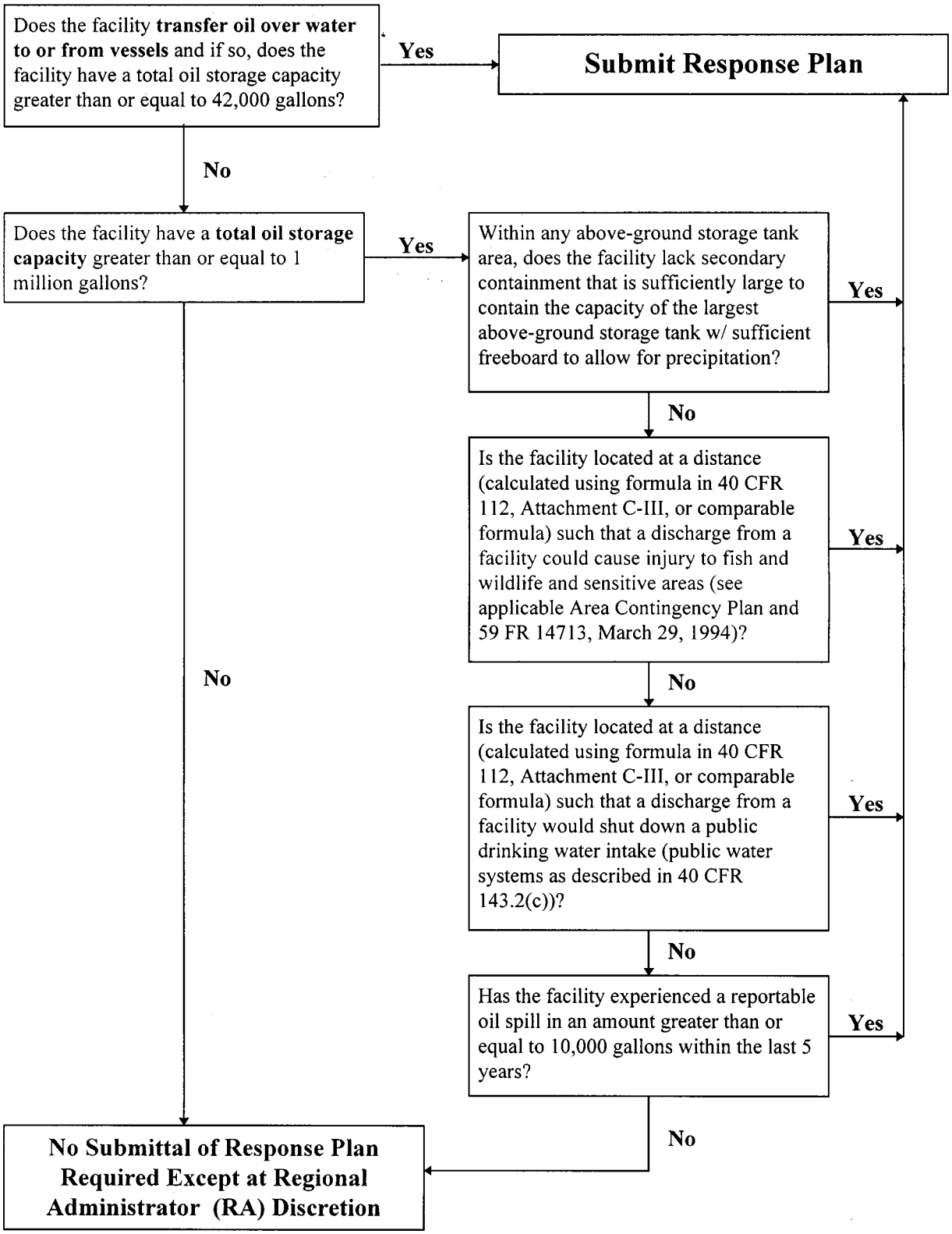
5.2.4.2. The steps for developing the vulnerable zones and response resources (to be discussed in Chapter 6) are identified in table 5.2., along with the major factors which influence each step.

Table 5.2. Facility Response Plan Steps and Factors Influencing Each Step.

Steps[1]	Factors Influencing Each Step
Substantial Harm Criteria Attachment C-I, Appendix C ⇩	• Facility Location • Storage Type • Oil Quantity • Spill History • Type of Operation • Secondary Containment
Planning Distance Attachment C-III, Appendix C ⇩	• Facility Location • Response Times • Access to Vulnerable Areas • Type of Water (Moving, Still, or Tidal)
Worst-Case Discharge Planning Volume Appendix D ⇩	• Oil Quantity • Secondary Containment • Manifolded versus Single Tank • Oil Piping Size & Capacity • Discovery, Notification, & Response Times • Oil Piping Flow Rates
Required Response Resources Appendix E	• Size of Discharges • Type of Oil • Response Times for Resources • Operating Environment • Equipment Capabilities & Limitations • Storage Capacity for Oil Recovery

[1]Steps further explained in appendices C through E of 40 CFR Part 112, *Oil Pollution Prevention.*

Figure 5.1. Flowchart of Criteria for Substantial Harm.



Source: 40 CFR Part 112, Attachment C-1

5.2.4.3. The first step involves determining facility-specific spill scenarios that may cause small or medium spills. The scenarios should account for all operations that take place (e.g., facility maintenance, pumping stations and sumps, etc.), factors that will affect potential exposure and response actions (e.g., size of the potential spills), and the impact of surrounding areas (e.g., schools, fish and wildlife, etc.). The second step involves determining how far an oil discharge could travel and impact vulnerable zones, the HAZMAT emergency planning team should complete the calculations in Attachment C-III, *Calculation of the Planning Distance*, in Appendix C of 40 CFR Part 112. The third step is to calculate the worst-case oil discharge using the criteria in Appendix D of 40 CFR Part 112. The fourth step is to calculate the required resources for the worst-case, medium, and small oil discharges. This will be discussed further in Chapter 6.

5.3. Process Hazards Analysis.

5.3.1. The Clean Air Act Amendments (CAAA), both EPA's proposed rule in 40 CFR Part 68 concerning risk management programs (RMPs) for chemical accidental release prevention, and OSHA's Process Safety Management standards in 29 CFR Part 1910.119, contain sections requiring hazard analysis. These hazard assessments are somewhat similar in nature to vulnerability analysis, so they have been included in this guidance. The proposed regulations in 40 CFR Part 68 concerning RMP, including the hazard assessment as part of the RMP will not be addressed in this chapter. At the time of publication the regulations are still in the proposal stage.

5.3.2. A hazard assessment (evaluation) is the main part of the total process hazard analysis required by OSHA in its Process Safety Management standards (29 CFR Part 1910.119). The Process Safety Management Standard applies only to processes which contain or are continuously supplied by chemicals in quantities greater than those listed in 29 CFR 1910.119, Appendix A. It establishes the requirements for prevention and response activities. A PHA is one of the most important elements of the process safety/risk management program. A PHA is an organized and systematic effort to identify and analyze the significance of potential hazards associated with the processing or handling of highly hazardous chemicals. A PHA provides information that will assist employers and employees in making decisions for improving safety and reducing the consequences of unwanted or unplanned releases of hazardous chemicals. A PHA analyzes potential causes and consequences of fires, explosions, releases of toxic or flammable chemicals, and major spills of hazardous chemicals. The PHA focuses on equipment, instrumentation, utilities, human actions (routine and non-routine), and external factors that might affect the process.

5.3.2.1. The selection of a PHA methodology or technique will be influenced by many factors including how much is known about the process. Personnel conducting the PHA need to understand the methodology that is going to be used. The methodologies include the following [29 CFR Part 1910.119(e)(2) and 40 CFR Part 68.24(d)]:

- What-if
- Checklist
- What-if/checklist
- Hazard and operability study (HAZOP)
- Failure mode and effects analysis (FMEA)

- Fault tree analysis
- An equivalent methodology

See Attachment 2 for additional information discussion on PHA methodologies.

5.3.2.2. The number of personnel conducting a PHA can vary in size from two full-time personnel to a number of people with varied operational and technical backgrounds. The person in charge of the PHA needs to be fully knowledgeable in the proper implementation of the PHA methodology to be used and should be impartial in the evaluation. The other full or part-time team members should provide expertise in areas such as: process technology; process design; operating procedures and practices; alarms; emergency procedures; instrumentation; maintenance procedures, both routine and non-routine tasks, including how the tasks are authorized; procurement of parts and supplies; safety and health; and any other relevant subjects. At least one team member should be familiar with the entire HAZMAT process.

5.3.2.3. The ideal team will have an intimate knowledge of the standards, codes, specifications, and regulations applicable to the process being studied. The team needs to be able to work together while benefiting from the expertise of others on the team or outside the team to resolve issues and to forge a consensus on the findings of the study and provide recommendations for the installation. In addition to the PHA process, guidelines found in Attachment 2 and the following worksheets may provide assistance.

5.4. Vulnerability Analysis Worksheets. Table 5.3. provides the information that should be collected on the vulnerability analysis for potential spills or releases involving HAZMATs which do not meet criteria for toxic airborne releases or oil discharges. For an Air Release Summary use a general purpose form as a worksheet for collecting the following information:

- Installation and date
- Whether the HAZMAT is an EHS or not (Determine if EHS from 40 CFR 302 Sara Title III.)
- Location by building number and grid coordinates
- Maximum quantity
- Screening Zone Radius (SZR) in miles
- Number of high risk facilities
- Number of mission impacts
- Risk Matrix Priority number (See 6.1.3 for determination instructions)

For a Hazardous Materials Spill Release Summary use a general purpose form as a worksheet for collecting the following information:

- Installation and date
- Location by building number and grid coordinates
- HAZMAT
- Type of container
- Maximum quantity

- Whether or not secondary containment is adequate
- Risk Matrix Priority number

This worksheet is completed after worksheets for air releases, oil discharges, and other HAZMAT spills/ releases are completed. These summary worksheets are used by the HAZMAT emergency planning team to prioritize the information previously collected and evaluated. The information is not only used by the team to develop the HAZMAT Plan, but can be used as a consolidated management tool to provide a broad perspective of installation needs and priorities.

Table 5.3. Suggested HAZMAT Spill/Release Vulnerability Table.

Item #	Source of Information	Required Information for your database
1	HAZMAT WS, Item 1	Name of Installation
2	HAZMAT WS Item 5	Name of HAZMAT
3	HAZMAT WS Item 5	Chemical Abstract Service (CAS) Number:
4	HAZMAT WS Item 3	Location of HAZMAT on Base (Building Number and Street Address):
5	HAZMAT WS Item 4	Occupancy of Facility:
6	MSDS	Physical State of Substance: - Gas - Liquid - Solid
7	HAZMAT WS Item 11	Container Type/Size: (If quantity is given in gallons, convert to lb)
8	HAZMAT WS Item 12	Maximum Quantity Normally Present:
9	HAZMAT WS Item 12	Average Daily Quantity:
10	HAZMAT WS Item 8	Potential Hazards (reference MSDS, or other HAZMAT data source): - Toxic - Fire/Explosion - Corrosive - Reactive

Item #	Source of Information	Required Information for your database
11	HAZMAT WS Item 9	Important Physical Characteristics (reference MSDS or other HAZMAT data source): - Mix with water - Float on water - Heavier than air - Sink in water - Lighter than air
12	HAZMAT WS Item 26	Probable Spill Route or Gas Release Prediction:
13	Emergency Response Guidebook	Distance for Evacuation when Container is Exposed to Fire: - feet in all directions - miles in all directions
14	Base Grid Map	Screening Zone Radius: Using a grid map and/or local area map, indicate the direction and area of potential flow around the potential release site as the center. This flow represents the estimated vulnerable zone. Identify high risk facilities within 2000 feet of bulk hazardous materials storage areas and 500 feet of all others. Identify facilities within evacuation zone (see 13 above) for potential container explosions due to fire exposure.
15	Base Grid Map	High Risk Facilities within the Initial Screening or Evacuation Zone: - Facility Number: - Occupancy - Grid Coordinates
16	Base Grid Map	Mission Impacted Areas/Facilities within Initial Screening or Evacuation Zone: - Facility Number - Occupancy - Grid Coordinates

5.5. Federal Requirements Summary. Table 5.4 provides a summation of the Federal requirements found in this chapter.

Table 5.4. Chapter 5 - Federal Requirements Summary.

Element	Standard
Process Hazards Analysis	29 CFR 1910.119(e)
Critical Water Use Areas	40 CFR 109.5(b)(1)
Spill Potential Quantities and Predicted Pathways	40 CFR 112.7(b)
Substantial Harm Determination	40 CFR 112.20(f)
No Substantial Harm Certification	40 CFR 112.20(e)

Element	Standard
Vulnerability Analysis	40 CFR 112.20(h)(4) 40 CFR 112, App F, 1.4.2
Tiered Planning Discharge Scenarios	40 CFR 112, App F, 1.5
SWP3 - Site Drainage and Flow Prediction	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.2.a.
BMP - Predict Direction, Rate, and Total Quantity of Potential Releases	40 CFR 125.104(b)(2)(ii)
BMP - Material Compatibility	40 CFR 125.104(b)(4)(iii)(D)
Methods for Determining the Occurrence of a Release and the Probable Affected Area	SARA Title III, Sections 301-303 40 CFR 300.215
Bulk Oil Transport Maximum Discharge Potential	49 CFR 130.31(a)(2)
Worst Case Discharges for Oil Pipelines	49 CFR 194.105
Vulnerability Analysis	*Technical Guidance for Hazards Analysis, Section 2.2*

Chapter 6

RISK ANALYSIS

6.1. Step 3 of the Hazards Analysis Process.

6.1.1. Risk analysis is the third part of the hazards analysis process. This step assesses the probability of damage (or injury) due to a hazardous materials release. Risk analysis provides a measure of the likelihood and severity of possible hazardous events and enables the HAZMAT emergency planning team to focus on the greatest potential risks. Risk analysis provides information on: the probability that a release will occur; any sensitive environmental conditions (such as areas in floodplains or wetlands); the possibility of simultaneous emergency incidents; the potential adverse effects to people and high-risk groups; the potential of damage to property; the potential damage to the environment; and the potential mission impacts. The information concerning risks to people, property, mission and environment should have been assembled during the hazards identification and vulnerability analyses. Risk analysis requires evaluating this information based on existing facility and community plans, local response capabilities, and past incidents and their outcomes. It includes a subjective estimate of the probability or likelihood that an event will occur. Risk can be characterized in qualitative terms as high, medium, or low, or in quantitative terms using numerical estimates and statistical calculations. Quantitative analysis may be required. Both probability and consequences are extremely important in evaluating risk.

6.1.2. The information collected on the worksheets in Chapters 4 and 5 provide a basis for determining a relative measure of the likelihood and severity of possible hazardous events. In order to determine risk at a facility, the following information should be evaluated:

6.1.2.1. Facility activities and management programs:

- All hazardous materials that could be released
- Shipping and transfer of hazardous materials
- Hazardous material storage conditions
- Handling procedures for hazardous materials

6.1.2.2. Facility location information:

- Pathway from material to receptor
- Physical, topographic and meteorological factors
- Facility, community, and environmental impacts of potential emergencies
- Population vulnerability

6.1.2.3. Site measures for managing and controlling chemical releases:

- Equipment available at the facility for emergency response
- Leak and spill detection systems
- Site emergency/evacuations plan and response procedures
- Emergency notification and communication procedures

6.1.2.4. Base emergency response and preparedness programs:

- Planning documents and activities
- Planning review and update, outside emergency response resources
- Training and preparedness
- Contingency planning with and notification process for local, state or other federal agencies
- Mutual aid agreement with the local community
- Emergency response and warning/evacuation communications

6.1.3. Assembling the Information for Risk Analysis and Completing Risk Worksheet. The following steps may be used by the HAZMAT emergency planning team to estimate potential risks from each hazardous material (see figures 6.1. and 6.2.).

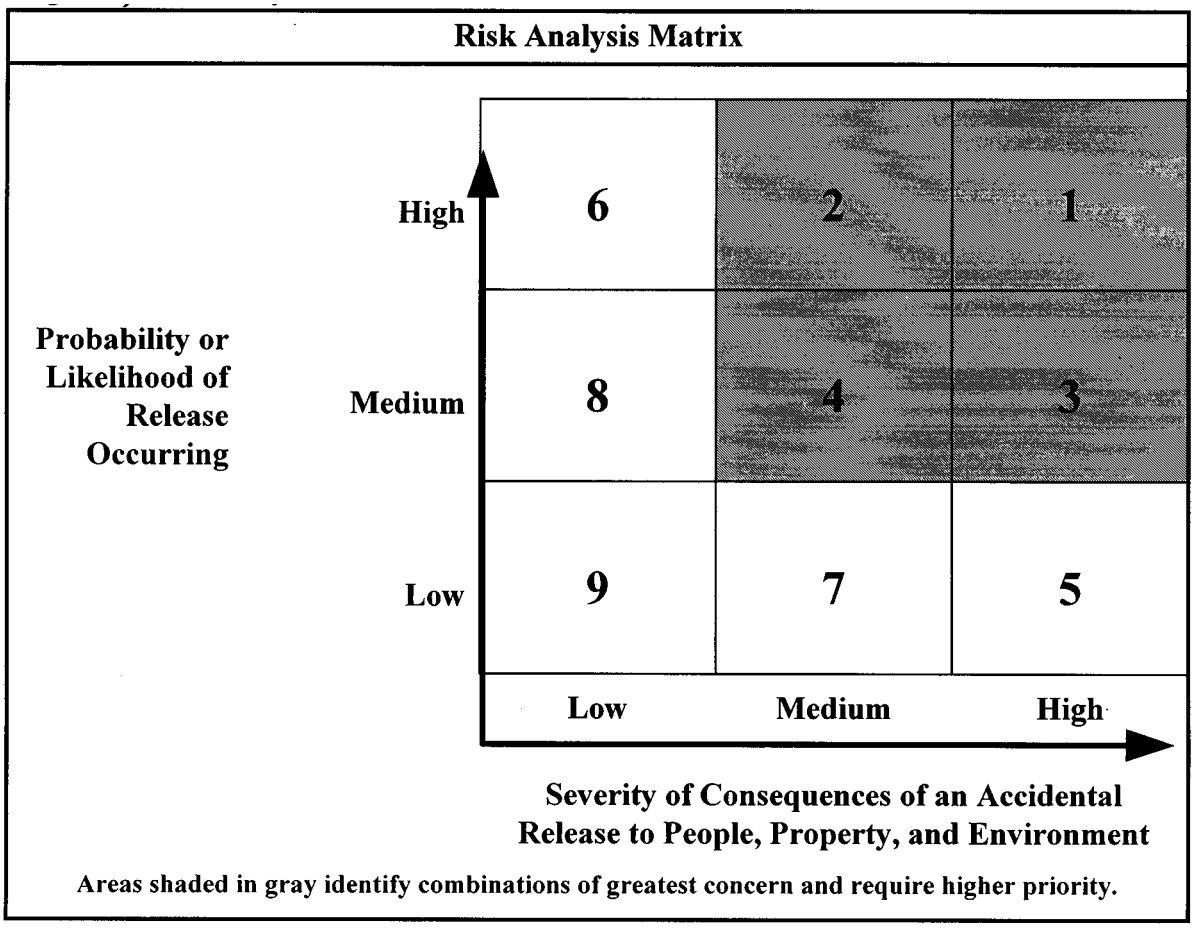
- Assign a ranking of likelihood of a release of high, medium or low for each event and include the results in the worksheet (see Figure 6.1.). Identify the type or size of release in the Rationale section. Multiple worksheets may be necessary for a given location if for example, there is concern for multiple sizes of releases (i.e. the probability of small leaks are sufficiently high and the probability of a major release is considered possible). Next, the severity of the potential consequences to people, property and the environment is ranked as high, medium, or low. Combine the results of the first two steps into a risk analysis matrix (see Figure 6.2.).
- Rankings of 1 (high-high), 2 (medium-high), 3 (high-medium), or 4 (medium-medium) are of immediate concern and require corrective action. Identify the top three factors that may have caused that ranking and correct those first.

Table 6.1. Suggested Risk Analysis Worksheet Format.

Risk Analysis Worksheet
HAZMAT: (Type and Location) Type of Release: (Describe Scenario)
Likelihood of Release and rationale: - Low - Medium - High
Consequences to People and rationale: - Low - Medium - High
Consequences to Property and rationale: - Low - Medium - High
Consequences to Environment and rationale: - Low - Medium - High

Risk Analysis Worksheet	
Summary - Likelihood/Severity of Consequences (using Risk Analysis Matrix): Low/Low (**9**) Low/Medium (**7**) Low/High (**5**) Medium/Low (**8**) Medium/Medium (**4**) Medium/High (**3**) High/Low (**6**) High/Medium (**2**) High/High (**1**)	
Qualitative Definitions of Probability of Occurrence	
Low:	Probability of occurrence considered unlikely during the expected lifetime of the facility or system assuming normal operation and maintenance.
Medium:	Probability of occurrence considered possible during the expected lifetime of the facility or system.
High:	Probability of occurrence considered sufficiently high to assume event will occur at least once during the expected lifetime of the facility or system.
Definitions of Severity of Consequences	
Low:	Oil or hazardous substance is expected to move into the surrounding environment in negligible concentrations. Injuries expected only for exposure over extended periods or when individual personal health conditions create complications.
Medium:	Oil or hazardous substance is expected to move into the surrounding environment in concentrations sufficient to cause: a. Either probable serious injuries and/or deaths unless prompt and effective corrective action is taken, b. Property damage, c. Mission impairment, d. Environmental damage or off-site impact. Death and/or injuries expected only for exposure over extended periods or when individual personal health conditions create complications.
High:	Oil or hazardous substance is expected to move into the surrounding environment in concentrations sufficient to cause multiple injuries or deaths, significant environmental damage or off-site impact, high value property damage or serious mission impairment. Large numbers of people expected to be affected.

Figure 6.1. Risk Analysis Matrix.



6.2. Federal Requirements Summary. Table 6.2 provides a summation of the Federal requirements found in this chapter.

Table 6.2. Chapter 6 - Federal Requirement Summary.

Element	Standard
Risk Management	29 CFR 1910.119(3)(5)
Material Handling Program	29 CFR 1910.120(p)(6)
Spill Prevention Measures	40 CFR 112.7(a)(3)(v)
Spill Control Measures	40 CFR 112.7(a)(3)(vi) 40 CFR 112.7(c)
Spill Control Measures Impracticable	40 CFR 112.7(d)
Inspections, Tests, and Records	40 CFR 112.7(e)
Analysis of the Potential for a Spill	40 CFR 112.20(h)(4) 40 CFR 112, App G, 1.4.3

Element	Standard
Facility Spill History	40 CFR 112.20(h)(4) 40 CFR 112, App G, 1.4.4
Discharge Detection Systems	40 CFR 112.20(h)(6) 40 CFR 112, App G, 1.6
Facility Self-Inspection (Tank Inspection)	40 CFR 112.20(h)(8)(i) 40 CFR 112, App G, 1.8.1.1
Facility Self-Inspection (Secondary Containment Inspection)	40 CFR 112.20(h)(8)(i) 40 CFR 112, App G, 1.8.1.3
Discharge Prevention Meeting Logs	40 CFR 112.20(h)(8)(iii) 40 CFR 112, App G, 1.8.3.2
SWP3 - Spills and Leaks	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.2.c.
SWP3 - Sampling Data	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.2.d.
SWP3 - Measures and Controls	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.3.
SWP3 EPCRA Section 313 Water Priority Chemicals	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.7.
BMP - Establish BMPs to Control Releases	40 CFR 125.104(b)(3)
BMP - Visual Inspections, Preventive Maintenance, Housekeeping, and Security RCRA - Preparedness and Prevention UST - Preventive Measures*Risk Analysis* *Probability Analysis, Consequence Analysis, and Formulation of a Planning Basis*	40 CFR 125.104(b)(4)(iii)(G-J) 40 CFR 264/265, Subpart C 40 CFR 264/265.174 & 195 40 CFR 280.20(c), 30(a), & 40(a)*Technical Guidance for Hazards Analysis, Section 2.3* *Handbook of Chemical Hazards Analysis Procedures, Chapters 11.0, 12.0, and 13.0*

Chapter 7

CAPABILITY ASSESSMENT AND RISK MANAGEMENT

7.1. Overview. Following the hazards analysis process, the HAZMAT emergency planning team conducts a thorough capability assessment to identify all base and local community resources available for response to HAZMAT releases and determines whether any additional resources or requirements are necessary. The goal of the HAZMAT emergency planning team is to implement a risk management program to ensure the resource capability is equal to the installation's potential HAZMAT problems. Senior leadership should determine whether or not a n unprotected risk exists, and if one does, modify that risk by either reducing their potential HAZMAT problem, increasing their response capability, or a combination of both.

7.2. Capability Assessment. The HAZMAT emergency planning team, in conjunction with members of the disaster control group and Post-emergency Response Team, should conduct a capability assessment that achieves the following:

- Identifies base resources available for responding to a HAZMAT release
- Assesses personnel, funding, information sources, command and control, site management, evacuation, personal protective equipment, monitoring, release control and containment, decontamination, laboratory support, clean-up, and recovery
- Determines whether the installation needs additional resources to respond effectively
- Identifies available local community resources, including available commercial services to supplement base shortfalls
- Sets up mutual aid agreements, including HAZMAT emergency response provisions, when using local community HAZMAT capabilities
- Identifies HAZMAT capability deficiencies and tracks them until it has implemented corrective actions

7.2.1. AFI 32-7045, *Environmental Compliance Assessment and Management Program* (formerly AFR 19-16) should be used in the assessment of present capabilities and plans. USACERL Special Report EC-95/05, The Environmental Assessment and Management (TEAM)Guide, Revised September 95, provides checklists used to assess the HAZMAT program.

7.2.2. There are three components which should be evaluated during the capability assessment: adequate resources, training, and response procedures, which tie the other two components together. Without considering all three components, a total capability assessment cannot be made. Base resources will be discussed in the following section. Refer to AFI 32-4002 for training requirements and to AFMAN 32-4004, *Emergency Response Operations,* for procedures relating to accident response.

7.3. Base Resources.

7.3.1. The HAZMAT emergency planning team must identify all installation resources available to respond to a HAZMAT release within a designated time frame. Each resource must be evaluated against the HAZMATs on the installation and those that transverse the installation by highway, rail, or pipeline. One approach is to list each HAZMAT of a large quantity or those considered highly toxic,

and then evaluate the types of resources necessary to handle a release of this type. Use the risk rankings developed in Chapter 6 to prioritize capability assessment. To help assess your HAZMAT capability, consider the following:

- What level and type of PPE is available?
- What types of monitoring equipment is available
- What type of control techniques are available?
- What types of decon techniques are available?

7.3.2. Hydrocarbon fuels (propane, natural gas, petroleum oils such as JP-8, gasoline, and diesel fuel) one of the most frequently encountered problems at most installations due to the high potential for ignition. The risk to storage facilities and fuel transport methods must be evaluated to ensure there are adequate capabilities to handle the expected scenarios. For those installations located along N_2O_4/LF_2 transportation routes, it is critical to assess requirements and capabilities for responding to releases of these materials. Information on the Emergency Response Plan and other guidance can be found in AFI 32-4002.

7.3.3. Time is extremely critical during a HAZMAT incident. All resources must be evaluated against the time required to get that resource to the incident scene and put the resource into action. This is called lead time. How organizations with resources are notified, how they transport the needed resources to the scene, and how they implement those resources should be evaluated against a time line. The resource time line should be compared to a time line which evaluates how a HAZMAT release scenario will progress if nothing is done to control it. For example, an installation may plan adequate resources to handle a release of a moderate proportion, but if the resources cannot arrive on the scene and be implemented within a specified time frame, then the release may expand beyond the installation's capabilities. Early detection of a HAZMAT release should be a major priority during risk management.

7.3.4. Capabilities must be compared against specific response action options. Sometimes, certain resources may need to be accessed quickly to implement certain response action options to protect life, the environment, or to maintain the mission. For example, a chlorine gas release has the potential to travel far and affect a large portion of an installation and its surrounding communities. This type of incident has the potential to have severe consequences. Because of the logistics of trying to evacuate a large population, it is more feasible to:

- Install an early detection system
- Provide the necessary equipment to the initial responders (Level A chemical protective clothing, monitoring devices, the proper chlorine control kit, etc.)
- Provide the required training and procedures to the initial responders to allow them to quickly control the chlorine release

7.3.5. Table 7.1. contains a list of suggested equipment for installations who take a proactive approach to handling HAZMAT releases. This list is a starting point for consideration of resource capabilities. Each HAZMAT emergency planning team must decide on the type and quantity of each resource.

Table 7.1. Suggested Equipment for HAZMAT Response at the Technician Level[1].

Incident Management and Safety	
• Incident Command Vests • Incident Command Control Charts • First Aid Kit • Emergency Communications Device • Incident Command Checklists	• Insulated Water Jug with Cups • Barricade Tape • Personal Alerting Devices • Automated Software
Product Control	
• Chlorine A Kit (if required) • Chlorine B Kit (if required) • Chlorine C Kit (if required) • Duct Tape • 2 Tubes of Liquid Steel • Pkg. of Lead Wool • Dome Clamps • 1 Pkg. of Plug-N-Dike or Equivalent • 2 Tubes of Epoxy Mix • Metal Salvage Drum • Poly Overpack Drum • Bags of Loose Absorbent • Sorbent Pads (18" or 24" square) • Bail/Bag Sorbent Booms (3" or 4" x 10') • Inflatable Plugs and Tank Patches • Leak Control Kits • Flashlights	• 2 Cold Chisels • 2 - 8" Adjustable Wrenches • 4 Putty Knives • 1 Bung Wrench • 2 - 12" Pipe Wrenches • 2 Channel Locks • 2 Pliers • 2 - 8" Vice Grips • 1/2" Socket Set with Ratchet • 3/4" Socket Set with Ratchet • 2 Sets of Phillips/Straight Blade Screwdrivers • 1 Rubber Mallet • 1 Wooden Mallet • 2 Wire Brushes • Assorted Sand Paper • Various types of Wooden Dowels and Wedges
Decon	

• 6 - 5 Gallon Pails • 6 Large Trash Cans • 4 Containment Pools • 5 Lengths of 25' Garden Hose • 2 Garden Hose Pistol Grip Nozzles • Portable Shower • 4 Double Female Garden Hose Connections • 4 Bottles of Liquid Laundry Soap • 12 Large Traffic Cones • 2 Folding Walkers	• 4 Chairs or Stools • 36 Heavy Duty Trash Can Liners • 2 Rolls 20' x 100' Heavy Plastic • 4 Long Handle Soft Bristle Brushes • 2 Long Handle Garden Shower Wands • 4 Brass or Plastic Garden Wyes with Shutoffs • 2 - 50' Lengths of 2 1/2" Fire Hose with Solid End Caps (One cap drilled with air hose connection) • Barricade Tape • Portable Shelter
Monitoring/Detection:	
• pH Paper or Meter • Oxygen Meter • Multi-function Meter (CGI/O_2/CO) • Photoionization Detector • Swipes	• Colorimetric Detector Tubes • Combustible Gas Indicator • Radiation Meters (Alpha/Beta/Gamma) • Portable GC/OVA
Personal Protective Equipment (PPE)[2]	
• 6 Level A Suits • SCBA and Spare Bottle • Disposable Boots/Boot Covers • 100 Pair Latex Gloves • Coveralls • Communications Equipment for Personnel in PPE (Portable Radios with Ear, Bone, or Throat Mikes) • Air Purifying Respirator (APR)	• Level B Suits • Gloves • Hard Hat • Ear Plugs • Nomex Overalls • Bag of Rags • Paper Towels
Note 1. This list is just a starting point for consideration of the equipment necessary for handling a HAZMAT release. Quantities and specific types of equipment must be determined by the HAZMAT emergency planning team and HAZMAT response team. Compatibility of the equipment with the HAZMATs to be potentially encountered must be considered. **Note 2.** PPE levels and types must be selected and certified (IAW 29 CFR 1910, Subpart I) based on compatibility with the HAZMATs which will potentially be encountered. Quantities must be determined based on the potential taskings and number of personnel available. There is no one suit material which is compatible with all HAZMATs. Multiple types of PPE may have to be purchased to ensure the proper protection for all potential installation HAZMAT scenarios.	

7.4. Local Community Resources. Upon completing the capability assessment for resources available on the installation, shortfalls should be identified. The HAZMAT emergency planning team should also determine what resources are available in the local community that can provide assistance to the installation. These resources could include local, regional, state, municipal, or industrial HAZMAT teams, fire departments, emergency medical services, public health offices, police and sheriff departments, environmental agencies, and contracted response, clean-up and remediation companies.

7.5. Resource Shortfalls. Shortfalls in resources available on-base or in the local community should be identified, prioritized, and tracked through the EPC until resolved.

7.6. Risk Management .

7.6.1. Risk management is the effective use of available resources (i.e., time, manpower, and funding) to prioritize and complete actions required to reduce risk. The HAZMAT emergency planning team should use sound risk management by dedicating resources to reducing the risk of HAZMAT releases on the installation. The process described below should help the team accomplish risk management. For the purposes of this Guide, risk management is a two step process. The first step is to review data gathered during hazard identification (Chapter 4) to determine if risk reduction is possible at any HAZMAT locations. The second step is to implement the risk reduction ideas generated in step 1, using the results of the capability assessment to determine applicability.

7.6.2. In the first step, the team should examine the Suggested HAZMAT Location Survey Worksheet (Figure 4.1) and Suggested Vulnerability Worksheets (Figures 5.2., 5.3., and 5.4.) to see if any of the risks can be reduced. The following questions may lead to ideas:

- What can be done to reduce risks identified during the hazards analysis?
- What operational or storage procedures can be implemented to reduce the probability of a release and minimize potential effects?
- What release prevention or mitigation systems, equipment, or procedures are in place?
- Can safer substitutes be used for any acutely toxic chemicals used or stored on the installation?
- Can the volume of used or stored hazardous materials be reduced?

7.6.3. After identifying possible risk reductions for HAZMAT locations, the team should ensure these ideas are implemented where possible. The ideas can consist of engineering controls, institutional controls, training requirements, or operational procedures. Therefore, the team should contact those base agencies which have the capability and/or authority to implement the risk reduction ideas. The team should also coordinate with the Pollution Prevention Working Group of the Environmental Protection Committee to ensure the team is not duplicating the working group's efforts and to take advantage of the working group's data collection and waste minimization efforts.

7.7. Federal Requirements Summary. Table 7.2. provides a summation of the Federal requirements found in this chapter.

Table 7.2. Chapter 7 - Federal Requirements Summary.

Element	Standard
PPE and Emergency Equipment	29 CFR 1910.120(q)(2)(xi) 29 CFR 1910.120(p)(8)(ii)(K)

Element	Standard
Skilled Support Personnel	29 CFR 1910.120(q)(4)
Specialist Employees	29 CFR 1910.120(q)(5)
Identify and Inventory Equipment, Materials, and Supplies Both Locally and Regionally	40 CFR 109.5(c)(1)
Estimate Anticipated Equipment, Material, and Supply Needs Based on Maximum Oil Discharge	40 CFR 109.5(c)(2)
Guidelines for Determining and Evaluating Required Response resources for Facility Response Plans	40 CFR 112.20(h)(3) 40 CFR 112, Appendix F
Emergency Response Information - Equipment	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.2
Emergency Response Information - Personnel	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.4
Description of Community and Industry Emergency Equipment and Facilities, and the Identity of Persons Responsible for Them	SARA Title III, Section 303(c)(6)
Bulk Oil Transport - Response Organizations and Agencies	49 CFR 130.31(a)(3)
Oil Pipeline Response Resources*Capability AssessmentCriteria for Assessing State and Local Preparedness: ResourcesInformation Collection to Evaluate Sites for Emergency Planning*	49 CFR 194.115*NRT-1, Section 3.4NRT-1, Appendix D, Section 2.5Technical Guidance for Hazards Analysis, Appendix I, Section 1.6*
Chemical Protective Clothing	29 CFR 1910.120(q)(10)
Post-Emergency Response Operations	29 CFR 1910.120(q)(11)
RCRA Inspection, Testing, and Maintenance of Emergency Response Equipment	40 CFR 265.33
Spill Control Measures	40 CFR 112.7
RCRA - Emergency Equipment	40 CFR 265.32
RCRA - Emergency Equipment Listing	40 CFR 265.52(e)
Agreements and Arrangements for Equipment, Materials, and Supplies	40 CFR 109.5(c)(3)
Evidence of Contracts or Other Approved Means	40 CFR 112.20(h)(3)(i-ii)
RCRA - Arrangements with Local Authorities	40 CFR 264/265.37 & 52(c)

Chapter 8

POST-EMERGENCY RESPONSE

8.1. Introduction. This chapter discusses techniques for release control, cleanup, and resources required for cleanup and disposal in the post-emergency response. Although this chapter is oriented towards post-emergency operations, the techniques discussed here can also apply to the emergency step. HAZMAT release control involves actions necessary to assure confinement and containment in a manner that will minimize risk to both life and the environment in the early, critical stages of a release. Cleanup and recovery involves actions necessary to restore a site to pre-incident conditions.

8.2. Cleanup Capabilities .

8.2.1. Control and stabilization of a release is typically handled by the installation while state regulatory agencies normally focus on cleanup details. Federal agencies can also provide assistance during the cleanup process. It is the releaser's legal and financial responsibility to clean up the release and minimize the risk to the health of the general public and workers that are involved. Federal or state governmental officials may monitor the responsible party's cleanup activities.

8.2.2. A list of appropriate control and cleanup countermeasures should be prepared for each hazardous material on the installation in excess of the screening quantities presented in Chapter 4. The HAZMAT emergency planning team should concentrate on the techniques that are applicable to the hazardous materials, the terrain, and other conditions of their area. This may include sketches and details on how cleanup should occur for certain areas where spills are more likely. This information can be obtained from the data collected during hazards identification and should be placed in the site specific contingency plans as appropriate. Water supply and sewage system protection procedures must also be developed.

8.3. Post-Emergency Response Team.

8.3.1. Each Air Force installation must establish a HAZMAT post-emergency response team or capability. The purpose of the team is to evaluate the emergency and recommend and carry-out post emergency actions which may include cleanup and remediation.

8.3.2. The on-scene commander/disaster response force oversees cleanup activities. The purpose of this element is to ensure cleanup and remediation are performed in a safe manner and comply with all applicable environmental compliance requirements. Representatives from bioenvironmental engineering, civil engineer, staff judge advocate, ground safety, security police, contracting, public affairs, and other user organizations are recommended. Post emergency action may involve either immediate cleanup efforts to return the incident site to pre-emergency conditions or a comprehensive remediation effort using outside contracted support.

8.4. Control Process.

8.4.1. Both natural and synthetic methods can be employed to limit the release of a hazardous material so that effective recovery and treatment can be accomplished with minimum additional risk to the environment or life. In all cases, methods used should be coordinated with the environmental flight. Control of a HAZMAT release involves product containment and confinement. This is the positive control of released materials by means of physical or chemical methods. Physical and chemical methods of release control (or mitigation) can be found in National Fire Protection Association (NFPA) 471, *Recommended Practice for Responding to Hazardous Materials Incidents.* Some examples are:

- Physical methods of control involve any of several processes or procedures to reduce the area of the spill, leak, or other release mechanism. Common examples include secondary containment, dikes, berms, and absorbents.
- Chemical methods of control involve the application of chemicals to treat spills of hazardous materials. Chemical methods may involve any one of several actions to reduce the involved area affected by the release of a hazardous material. A few examples include neutralizers for an acid spill (lime products) or pf HTH for hydrazine.

8.4.2. All control decisions must be based on the availability of time, personnel, equipment, supplies, and the potential harmful effects of the leaking material.

8.5. Cleanup and Recovery Process.

8.5.1. If the hazardous substance incident no longer poses a threat to life, property or mission, it now becomes a cleanup operation and the HAZMAT response team's role becomes a supportive one. The HAZMAT response team's role during cleanup is to assure the job is done safely. Should life or property become threatened again during cleanup, the HAZMAT response team will resume the leading role.

8.5.2. Recovery actions are activities in support of cleanup and site remediation. Restoration of the area is a long-range project, but general restoration steps should appear in the Plan. Specific consideration should be given to the mitigation of damages to the environment.

8.5.2.1. If there is any equipment which has been contaminated, it must be decontaminated or replaced. Chemical protective clothing which was used during the emergency response must be tested to ensure it is still usable and appropriate documentation must be completed.

8.5.2.2. If contaminants came into contact with places where humans are likely to be affected, the area should be tested for contamination. Appropriate steps must be taken to safeguard plants and animals, especially endangered species that have come in contact with a HAZMAT. It is important to identify in advance what instruments and methods can be used to detect the material in question.

8.5.2.3. Disposal of hazardous materials or wastes is regulated by a number of Federal and state laws. Both CERCLA and RCRA regulate waste disposal and it is important that the Plan reflect the requirements of these regulations for on-site disposal, transportation, and off-site disposal. Hazardous waste disposal may exceed the capabilities of DRMO. In such cases, the Plan should indicate the appropriate state and/or Federal agency that is responsible for making decisions regarding disposal.

8.5.2.4. Many states have their own regulations regarding transport and ultimate disposal of hazardous waste. State regulations are typically similar to Federal regulations. Each installation should contact appropriate state agency offices for information on state requirements for hazardous waste disposal.

8.6. Federal Requirements Summary. Table 8.1. provides a summation of the Federal requirements found in this chapter.

Table 8.1. Chapter 8 - Federal Requirements Summary.

Element	Standard
Emergency Alerting and Response Procedures	29 CFR 1910.120(q)(2)(ix) 29 CFR 1910.120(p)(8)(ii)(I)

Element	Standard
Post-Emergency Response Operations	29 CFR 1910.120(q)(11)
Specific Actions for Oil Discharge	40 CFR 109.5(d)
Oil Pollution SPCC Plans	40 CFR 112.7(2)(3)(vii)
Disposal Plans	40 CFR 112.20(h)(7)(iii) 40 CFR 112, App F, 1.7.2
Containment and Drainage Planning	40 CFR 112.20(h)(9) 40 CFR 112, App F, 1.7.3
SWP3 - Spill Prevention and Response Procedures	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.3.c.
RCRA - Recovery and Remediation	40 CFR 262.34(d)(5)(iv)(B) 40 CFR 264/265.56 40 CFR 264/265.196
Operational Response Phases for Oil Removal	40 CFR 300, Subpart D
Hazardous Substance Response	40 CFR 300, Subpart E
PCB Clean-up	40 CFR 761, Subpart G
Bulk Oil Transport Manner of Response	49 CFR 130.31(a)(1)
Oil Pipeline Response Spill Detection and Mitigation Procedures	49 CFR 194.107(d)(1)(iii)
Containment and Clean-up	NRT-1, Planning Element D; NRT-1A, Section 26.0

Chapter 9

RELEASE NOTIFICATION AND REPORTING REQUIREMENTS

9.1. Air Force and Federal Requirements. AFI 32-4002 contains general information on release notification and reporting when a HAZMAT release exceeds its RQ or when it may result in litigation or adverse publicity. This chapter outlines specific incidents and the actions that should be taken according to a given Federal regulation. Table 9.1. shows current Federal release reporting and notification for Federal requirements. More than one reporting requirement may apply. Many states and local governmental entities have more stringent release reporting and notification requirements that installations must identify and comply with.

Table 9.1. Federal Notification/Reporting Requirements.

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
Reportable occupational injury and illness	Employer logs and summarizes injury and illness for internal use	Record information within six days, use format prescribed in OSHA 2014 publication	Update log when status of each entry changes. Annual summary of occupational injuries and illnesses, posted within 45 days after end of fiscal year	29 CFR 1960.67 and 69	OSHA
Supplemental record of occupational injury and illness	Employer records information on OSHA Form No. 101 or OWCP Forms CA-1, CA-2, and CA-6	Record information within six working days	None	29 CFR 1960.68	OSHA

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
Fatality or multiple hospitalization (One or more fatalities or five or more hospitalizations)	Head of Agency reports to the nearest Federal OSHA office	Within 48 hours-circumstances, names, actions taken, number of employees involved, extent of injuries	Summary report containing accident investigation, date/time of accident, agency name and location, personnel categories, consequences, description of operations and accident, causal factors, applicable standards, and corrective actions	29 CFR 1960.70	OSHA
Release of a listed carcinogen (material is outside of closed system or isolated system with potential exposure). See 29 CFR Part 1910	Employer reports to the nearest Federal OSHA office	Within 24 hours - Report incident - Available facts - Medical treatment for exposed employees	Within 15 days - Quantity released - Duration of release - Release Calculations - Description of area - Extent of employee exposure and area contamination - Medical treatment provided - Medical surveillance program details - Analysis of incident circumstances and preventative measures with completion dates	29 CFR 1910.1003 (f)(2) 1910.1004 (f)(2) 1910.1007 (f)(2) 1910.1008 (f)(2) 1910.1010 (f)(2) 1910.1011 (f)(2) 1910.1012 (f)(2) 1910.1014 (f)(2) 1910.1015 (f)(2) 1910.1016 (f)(2)	OSHA

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
Release of a listed carcinogen (material is outside of closed system or isolated system with potential exposure). See 29 CFR Part 1910	Employer reports to the nearest Federal OSHA office	Within 24 hours Report incident and facts available at that time	Additional information upon request	29 CFR 1910.1017 (n)(2)	OSHA
Release of a listed carcinogen (material is outside of closed system or isolated system with potential exposure). See 29 CFR Part 1910	Employer reports to the nearest Federal OSHA office	Within 72 hours Report incident and available facts at that time	Additional information upon request	29 CFR 1910.1045 (d)(2)	OSHA
Discharge of oil, pollutant or other hazardous substance. (Discharge in excess of effluent standard)	Person in charge of vessel or facility reports to the National Response Center (NRC) If not practical, then the individual reports to the Coast Guard or the EPA on-scene coordinator, then to the NRC as soon as possible	Immediately following knowledge of discharge.	As required by agencies (follow-up to NRC not applicable).	33 CFR 153.203	Coast Guard

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
Release of hazardous air pollutants	Owner/operator of air emission source reports to the EPA regional administrator	Varies by air pollutant (check specific rule)	Varies by air pollutant (check specific rule)	40 CFR 61 (various subsections)	EPA (CAA)
Oil discharge (film sheen or discoloration to water surface or adjoining shoreline, or violation of applicable water quality standards)	Person in charge of vessel or facility reports to the National Response Center. If not practical, the individual reports to the Coast Guard or the EPA on-scene coordinator, then to NRC as soon as possible	Immediately, as prescribed by DoT (see 33 CFR 153, Subpart B, and 40 CFR 300, Subpart E)	Not applicable	40 CFR 110.10	EPA (FWPCA)
Discharge of hazardous substance (RQ)	Person in charge of vessel or facility reports to the appropriate government agency	Immediately, as soon as known	As required by agency	40 CFR 117.21	EPA (FWPCA)
NPDES permit noncompliance (Endangering health or the environment ; discharge in excess of permit allowance)	Permittee reports to the EPA regional administrator	Within 24 hours: - Unanticipated bypass exceeding permit effluent limits - Upset condition exceeding permit effluent limits - Violation of maximum daily discharge limits	Within 5 days: - Description of non-compliance and its cause - Dates and times of non-compliance - Dates and times of expected continuance of non-compliance; - Steps taken or planned to prevent recurrence	40 CFR 122.41(l)(1) 40 CFR 122.41(l)(2) 40 CFR 122.41(l)(6) 40 CFR 122.41(l)(7)	EPA (CWA)

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
NPDES permit non-compliance (Discharge of specific toxic pollutants or other toxic pollutants at certain concentrations not covered or limited by the permit)	Permittee reports to the EPA regional administrator	As soon as known, additional to those requirements in 40 CFR 122.41 for any toxic pollutant not limited in the permit	As required by the agency	40 CFR 122.42(a)(1) 40 CFR 122.42(a)(2)	EPA (CWA)
RCRA generator facility emergency (Fire, explosion or other release that threatens human health outside the facility, or a spill that has reached surface water)	Emergency coordinator reports to the National Response Center	Immediately: - Name, address and EPA ID number - Date, time and type of incident - Quantity and type of waste involved - Estimated quantity and disposition of recovered material	Not applicable	40 CFR 262.34(d)(5)(iv)	EPA (RCRA)
Discharge while transporting hazardous waste	Transporter reports to the National Response Center (if required by 49 CFR 171.15) and DoT (if required by 49 CFR 171.16)	Earliest practicable moment (49 CFR 171.15)	Within 15 days (49 CFR 171.16)	40 CFR 263.30(c)(1) 40 CFR 263.30(c)(2)	EPA (RCRA)

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
RCRA TSD facility emergency (Release, fire, or explosion which could threaten human health or the environment outside the facility)	Emergency coordinator and owner/ operator reports to the designated on-scene coordinator or National Response Center, state and local authorities, and EPA regional administrator	Immediately: - Reporter's name and telephone number - Facility name and address - Time and type of incident - Name and quantity of materials involved - Extent of injuries - Possible hazards to human health or the environment outside the facility	Within 15 days: - Owner/operator name, address and telephone number - Facility name and address, and telephone number - Date, time, and type of incident - Name and quantity of materials involved - Extent of injuries - Assessment of actual or potential hazards to human health or the environment - Estimated quantity and disposition of recovered materials	40 CFR 264.56(d)(1) 40 CFR 264.56(d)(2) 40 CFR 264.56(j)	EPA (RCRA)
RCRA Interim status facility emergency (Same incidents as 40 CFR 264.56)	Emergency Coordinator and owner/operator reports the same information as 40 CFR 264.56	Immediately (same information as 40 CFR 264.56)	Within 15 days (same information as 40 CFR 264.56)	40 CFR 265.56(d)(1) 40 CFR 265.56(d)(2) 40 CFR 265.56(j)	EPA (RCRA)

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
Release from tank system or secondary containment (Any release to the environment, unless equal to or less than 1 pound and immediately contained and cleaned up	Owner/operator reports to the EPA regional administrator and also to the National Response Center if = or > RQ	Within 24 hours	Within 30 days: - Likely route of release migration - Surrounding soil characteristics - Proximity to down- gradient drinking water, surface water, and populated areas - Description of actions taken or planned	40 CFR 264.196(d)(1) 40 CFR 264.196(d)(3)	EPA (RCRA)
Release from tank system or secondary containment (same incidents as 40 CFR 264.196)	Owner/operator reports the same as 40 CFR 264.196	Within 24 hours	Within 30 days (same information as 40 CFR 264.196)	40 CFR 265.196(d)(1) 40 CFR 265.196(d)(3)	EPA (RCRA)

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
Release from underground storage tank (Free product or vapor in soils, sewers, or surface water, unusual operating conditions, unexplained water, etc. Also greater than 25 gallons of petroleum, sheen, or + or > RQ)	Owner/operator reports to the Implementing Agency (or National Response Center if = or > RQ)	Immediately, if release is = or > than RQ; otherwise, within 24 hours (40 CFR 280.50, 40 CFR 280.53 and 40 CFR 280.61)	Within seven days (40 CFR 280.52) or within 20 days (40 CFR 280.62)	40 CFR 280.50 40 CFR 280.52 40 CFR 280.53(a) 40 CFR 280.53(b) 40 CFR 280.60 40 CFR 280.61	EPA (RCRA)

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
RCRA permit non-compliance (Endangering health or the environment)	Permittee reports to the EPA regional administrator	Within 24 hours: - Owner/operator name, address, and telephone number - Facility name, address, and telephone number - Date, time, and type of incident - Name and quantity of substance involved; - Extent of injuries - Assessment of actual or potential hazards to human health or the environment outside the facility - Estimated quantity and disposition of recovered materials	Within 5 days: - Description of non-compliance and its cause - Dates and times of non-compliance - Dates and times of expected continuance of non-compliance - Steps taken or planned to prevent recurrence	40 CFR 270.30(l)(6)	EPA (RCRA)
Hazardous substance release (+ or > RQ)	Person in charge of vessel or facility reports to the National Response Center	Immediately	Not applicable	40 CFR 302.6(a)	EPA (CERCLA)

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
SARA extremely hazardous substance release or CERCLA hazardous substance release (if = or >RQ, see 40 CFR 355, Appendix A for SARA EHS list or 40 CFR Table 302.4 for CERCLA HS list)	Owner/operator reports to the Local Emergency Planning Committee, State Emergency Response Commission, or local emergency response personnel (911 in case of transportation related release)	Immediately: - Name and identity of substance involved - EHS (yes or no) - Estimated quantity of release - Time and duration of release - Medium receiving release - Known or anticipated health risks, medical advice for exposed individuals - Proper precautions to take as a result of release	As soon as practicable: - Update previously supplied information - Actions taken to respond to and contain the release - Known or anticipated health risks - Medical advice for exposed individuals	40 CFR 355.40 (b)(1) 40 CFR 355.40 (b)(2) 40 CFR 355.40 (b)(3)	EPA (EPCRA)
PCB spill (equal to or greater than 50 ppm concentration with release to surface water, drinking water supplies, sewers, grazing lands, etc.)[spill definition is any PCB quantity = or > 50 ppm (40 CFR 761.123)]	Responsible party reports to the National Response Center, and EPA regional Office of Pesticides and Toxic Substances (OPTS) for RQ release; EPA OPTS for other incidents	Immediately for RQ release. Shortest possible time (no later than 24 hours) for other incidents	As required by agency	40 CFR 761.120(a)(2) 40 CFR 761.125(a)(1) NOTE: RQ is 1 lb. (117.3 and 302.4); 40 CFR 761.125 has a 10 lb. threshold. RQ preempts 10 lb. threshold. See also 40 CFR 761.120(e)	EPA (TSCA)

Incident	Report To	Immediate Action	Follow-up Action	Regulation	Agency
Transportation incident (Hazardous materials incident resulting in fatality, injury requiring hospitalization, property damage greater than $50,000, more than one hour's shutdown of major transportation arteries and facilities, public evacuation of more than one hour, other situations)	Carrier reports to DoT, National Response Center or Center for Disease Control, as appropriate. Written report to Information Systems Manager, Research and Special Programs, DoT	Earliest practicable moment: - Name of reporter - Carrier name and address - Telephone number where reporter can be contacted - Date, time, and location of incident - Extent of injuries - Class, name and quantity of material - Type of incident and nature of hazard	Within 30-days (as required by CFR 171.16): - Use DoT Form F 5800.1 - Copy of manifest (if waste) - Estimated quantity of waste removed from incident scene - Name and address of receiving facility - Disposition of any unremoved waste	49 CFR 171.15(a) 49 CFR 171.15(c) 49 CFR 171.16(a) 49 CFR 171.16(b) [See exceptions listed in 49 CFR 171.16 (c) and 49 CFR 171.16(d)]	DoT (HMTA)
Unauthorized discharge (Hazardous material release reportable under federal, state, and local regulations)	Permittee reports to the Fire Chief	Immediately	Accurate records must be maintained	Uniform Fire Code, 1991 edition, Sec. 80.105 (a) and 80.105 (b)	NFPA

9.2. Pollution Report. A pollution incident report should be completed for all environmental releases which are caused by an Air Force activity or which occur on an Air Force installation or facility that requires reporting to Federal, state or local agencies. In addition, a pollution incident report is required for any release that requires reporting to host nations. Statements of Work (SOW) for Air Force contracts shall require contractors [including Government-Owned, Contractor-Operated (GOCOs)] to immediately

notify the cognizant Quality Assurance Evaluator (QAE) or contract inspector to trigger the reporting procedure. In addition, any environmental release that is likely to result in litigation or adverse publicity must be reported.

9.3. MAJCOM Responsibilities. MAJCOMs must ensure all appropriate state and local regulatory requirements have been identified by the installation and that releases are reported to the installation environmental management office. MAJCOMs will supplement this guidance to implement the aforementioned Air Force policy. The MAJCOM supplement will identify all Air Force offices (e.g. the appropriate Air Force Regional Compliance Office (RCO), and MAJCOM bioenvironmental engineering, fuels, legal, and public affairs office) and non-Air Force agencies' (e.g. National Response Center, Host-nation reporting agency) of these notification requirements.

Chapter 10

HAZMAT PLAN

10.1. Introduction. This chapter provides guidance on a HAZMAT appendix to Annex A of Base Oplan 32-1 or an all encompassing HAZMAT plan as stipulated in paragraph 1.1.1.

10.2. Site Specific Contingency Plans.

10.2.1. These plans should be incorporated into the HAZMAT Plan and posted in readily accessible areas at the applicable potential release sites. The site specific contingency plans should be used by the personnel initially discovering a release to initiate containment procedures and by the On-Scene Commander (OSC) to provide assistance in directing release response actions. The site specific plans should not be designed to alter the responsibilities of the HAZMAT response team but rather to provide site specific supplemental information to increase the efficiency of release response actions. Units should develop site specific contingency plans and implementing instructions for the plan if they fall into one or more of the following categories:

- Possess Threshold Planning Quantities (TPQs) of hazardous chemicals
- Possess hazardous chemicals that are part of the installation cumulative total which exceeds the TPQ
- Have sites with significant historical releases; or sites with the potential for “major” oil releases
- Have bulk HAZMAT loading and unloading sites
- Have hazardous waste 90 or 180 day accumulation sites
- Have storage sites containing liquid PCBs awaiting disposal
- Have sites where local containment options or response equipment exist on site
- Have sites deemed by the HAZMAT emergency planning team to have significant release potential and/or the potential for serious health, mission impairment or environmental impacts.

10.2.2. At a minimum, the following information should be included in the site specific contingency plan:

- Surface transportation routes used and areas of extreme concern (population centers, high traffic areas).
- The evacuation procedures to be initiated in the event of a release, if applicable. The evacuation procedures should include the location and nature of the signals to be used to begin the evacuation and applicable evacuation routes.
- The initial release response actions that should be taken by individual(s) discovering a release. These actions should include all relevant release response and notification procedures along with the location of valves and pump controls that could stop the release as well as the location of, and procedures for using, any readily available release response equipment such as fire extinguishers, absorbents, and drain plugs.
- The probable release route and the locations where release containment measures could be implemented. This should include the containment and clean-up procedures and response equipment that can be utilized. Maps should be used as necessary.

- The requirement that applicable Material Safety Data Sheets (MSDSs) be kept available.
- A list of special notification requirements and procedures should be annotated in the Plan.
- Disposal and decontamination procedures for release material and contaminated soil, water, and equipment are to be outlined in the Plan.
- Sampling and Analysis Plan.

10.3. Plan Review and Approval.

10.3.1. The HAZMAT emergency planning team will conduct internal reviews of the Plan to assess adequacy and completeness. Once this internal review is accomplished, the Plan will be revised in preparation for external review. The external review process should involve peer review, review by a registered professional engineer, upper level review, and community input. The HAZMAT Plan will be coordinated with other affected agencies.

10.3.2. Peer review entails finding qualified individuals who can provide objective reviews of the Plan. Appropriate reviewers include members of organizations represented on the HAZMAT emergency planning team. After peer review and modification, the Plan is submitted to the EPC members for review.

10.3.3. The EPC will provide the LEPCs with changes to the HAZMAT Plan. The HAZMAT emergency planning team will incorporate comments and identify and comply with any local or state regulatory requirements for formal plan approval.

10.4. Plan Update.

10.4.1. At minimum**,** the frequency of plan reviews will occur over the following intervals:

- At 3 year intervals as required by the EPC and once per year as required by the HAZMAT emergency planning team (SARA Title III)
- When a NPDES permit or RCRA permit is issued, reissued or changed for CWA 307 and 311 substances
- When a RCRA permit is issued, reissued or changed for hazardous wastes
- When the facility changes its mission, design, construction, operation, and maintenance or other circumstances in such a way as to increase or decrease the potential for a release
- After the Plan has been implemented
- At the request of EPA Regional Administrator, EPA Enforcement's Division Director, or applicable state agency director
- When the response organization list changes
- After changes to pertinent Federal, state, or local legislation, DoD, or Air Force policy occur
- After changes or modifications of applicable multinational, Federal, regional, or state contingency plans occur

10.4.2. The HAZMAT emergency planning team is responsible for conducting reviews based on the same procedures used to initially develop the Plan (see AFI 32-4001 for information on changing OPlan 32-1). Make sections that are subject to frequent changes either easily replaceable or provide blank space so that old material may be crossed out and new data may be easily written in. This applies

particularly to telephone rosters and equipment listings. This review will include a detailed inspection of all HAZMAT sites and verification and updating of the emergency response equipment inventory. Special attention should be given to the following:

- New locations for HAZMAT or increased usage of existing HAZMAT
- Changes in HAZMAT processes that affect the potential for a release
- Changes in maximum release quantities
- Changes in probable spill routes
- New release prevention and response technology
- Changes in adjacent land and water use that might affect release prevention and response procedures, methods, and equipment
- Changes in notification procedures for Federal agencies, state agencies, spill response organization members, or local off-base personnel or organizations
- Verifying regulations and reportable spill quantities have not changed
- Changes to site specific contingency plans
- Changes to emergency telephone numbers and names of key personnel

10.5. Federal Requirements Summary. Table 10.1 provides a summation of the Federal requirements found in this chapter.

Table 10.1. Chapter 10 - Federal Requirements Summary

Element	Standard
Accident/Incident Investigation	29 CFR 1910.119(m)
Procedures for Reporting Incidents	29 CFR 1910.120(p)(8)(iv)(A)
Critique Of Response and Follow-up	29 CFR 1910.120(q)(2)(x) 29 CFR 1910.120(p)(8)(ii)(J)
Recovery of Damages and Enforcement Measures	40 CFR 109.5(e)
Report to EPA Regional Administrator and State Due to Oil Release	40 CFR 112.4
Notice of Discharge of a Reportable Quantity (RQ)	40 CFR 117.21 40 CFR 302.6
SWP3 - Record Keeping and Internal Reporting Procedures	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.3.f.
RCRA - Notification and Reporting	40 CFR 264/265.196(d)
UST - Notification and Reporting	40 CFR 280.50, 53, & 61-63
Emergency Notification Procedures	SARA Title III, Sections 301-303 and Section 304 40 CFR 300.300(b) & 405(b) 40 CFR 355.40
Toxic Chemical Release Reporting	40 CFR 372
PCB Notification and Reporting	40 CFR 761.125
Documentation and Investigative Follow-up	NRT-1, Planning Element E NRT-1A, Section 27.0
Criteria for Assessing State and Local Preparedness: Communication	NRT-1, Appendix D, Section 2.4
Spill Documentation Planning Items	Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Item SD1
Review of SPCC Requirements Every Three Years	40 CFR 112
Significant and Substantial Harm Determination, Review, and Approval by EPA Regional Administrator	40 CFR 112
Amendments to Facility Response Plan Requirements Due to Changes	40 CFR 112.5(a) 40 CFR 112.5(b) 40 CFR 112.20(c) 40 CFR 112.20(d)
Review National Contingency Plan and Area Contingency Plans Annually	40 CFR 112.20(g)(2)
Update Plan After Spill Event	40 CFR 112, App F, 1.7

Element	Standard
Mock Alert Drills	40 CFR 112.20(h)(8)(ii) 40 CFR 112, App F, 1.8.2
Stormwater Pollution Prevention Plan Currency	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.C.
SWP3 - Comprehensive Site Compliance Evaluation	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.4.
SWP3 EPCRA Section 313 Water Priority Chemicals - Engineering Certification	NPDES General Permit for Stormwater Associated with Industrial Activity, Part IV.D.7.b.(10)
BMP - Permit Application and Revisions	40 CFR 125.104(c-f)
RCRA - Amendments to Contingency Plan	40 CFR 264/265.54
Methods and Schedules for Exercising Emergency Response Plans	SARA Title III, Sections 301-303
Oil Pipeline Response Plan Review and Update	49 CFR 194.121 49 CFR 194.107(d)(1)(x)
Oil Pipeline Response Drill Types, Schedules, and Procedures	49 CFR 194.107(d)(1)(ix)

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Attachment 1

GLOSSARY OF REFERENCES, ABBREVIATIONS, ACRONYMS, AND TERMS

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Abbreviations and Acronyms

ACP—Area Contingency Plan

ARCHIE—Automated Resource for Chemical Hazard Incident Evaluation

AST—Above-ground Storage Tank

CAA—Clean Air Act

CAAA—Clean Air Act Amendments

CAS—Chemical Abstract Service

CERCLA—Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended

CFR—Code of Federal Regulations

CHRIS—Coast Guard Chemical Hazard Response Information System

EHS—Extremely Hazardous Substance

EPA—Environmental Protection Agency

EPC—Environmental Protection Committee

EPCRA—Emergency Planning and Community Right-To-Know Act of 1986

FEMA—Federal Emergency Management Act

FMEA—Failure Mode and Effect Analysis

FRP—Federal Response Plan

FWPCA—Federal Water Pollution Control Act also known as the Clean Water Act (CWA)

GOCO—Government Owned/Contractor Operated

HAZCOM—Hazard Communication

HAZMAT—Hazardous Material

HAZMAT Plan—Hazardous Material Emergency Planning and Response Plan

HAZWOPER—Hazardous Waste Operations and Emergency Response

HMIS—Hazardous Material Information System

HMP—Hazardous Material Pharmacy

IDLH—Immediately Dangerous to Life and Health

IEX—Issue Exception Code

IRE—Initial Response Element

LEPC—Local Emergency Planning Committee

LOC—Level of Concern

MSDS—Material Safety Data Sheet

NCP—National Contingency Plan

NFPA—National Fire Protection Association

NRC—National Response Center

NRT—National Response Team

OPA—Oil Pollution Act of 1990

OPlan 32-1—Base Disaster Preparedness Plan

OSC—On-Scene Commander

OSHA—Occupational Safety and Health Administration

PCB—Polychlorinated Biphenyl

PPE—Personal Protective Equipment

PSM—Process Safety Management

QAE—Quality Assurance Evaluator

RA—Remedial Action

RCRA—Resource Conservation and Recovery Act of 1976

RMP—Risk Management Plan

RQ—Reportable Quantity

SARA—Superfund Amendments and Reauthorization Act of 1986

SCBA—Self Contained Breathing Apparatus

SERC—State Emergency Response Commission

SPCC—Spill Prevention, Control and Countermeasures

Title III—Title III of SARA (Emergency Planning and Community Right-to-Know Act of 1986)

TPQ—Threshold Planning Quantity

TSCA—Toxic Substances Control Act

USCG—United States Coast Guard

UST—Underground Storage Tank

Terms

Accidental Release—An unanticipated emission of a regulated substance or other extremely hazardous substance into ambient air from a stationary source.

Area Contingency Plan—The plan prepared by an area committee that is developed for implementation in conjunction with the National Contingency Plan (NCP) and Regional Contingency Plan (RCP), in part to address removal of a worst case discharge and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near an area designated by the President (usually major navigable waters and coastal areas under the authority of the US Coast Guard).

Average Most Probable Discharge—This definition is agency dependent and the appropriate definitions are detailed as follows:

1) For regulated facilities, a spill volume less than 2,100 gallons, provided this amount is less than the worst-case discharge [40 CFR Part 112.20(g)(5)(ii)].

2) For the marine transportation-related (MTR) segment of a facility, a discharge of the lessor of 50 barrels (2,100 gallons) or one percent of the volume of a worst-case discharge [33 CFR Part 154.1020].

3) For pipelines, the size of the discharge as defined in 49 CFR Part 194.

4) For areas the size of the discharge as defined in the Area Contingency Plan (*check your local applicable ACP*).

Boiling Point—Temperature at which a liquid changes to a vapor or gas; liquid psi = atm psi.

CERCLA Hazardous Substance—Those substances listed in 40 CFR 302, Table 302.4.

Confined Space—A space that: 1) is large enough and so configured that an individual can physically enter and perform assigned work; 2) has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and 3) is not designed for continuous individual occupancy (s*ee permit-required confined space*) [29 CFR 1910.146(b)].

Disaster Control Group—The disaster response force element that goes to the scene of a major accident or natural disaster to provide command and control under the direction of the on-scene commander.

Discharge—Includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying or dumping of oil or other hazardous substance, or any action that violates applicable water quality standards; causes a film, sheen or discoloration of the surface of the water or adjoining shoreline; causes a sludge or emulsion to be deposited beneath the surface of the water of adjoining shoreline; causes a

sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shoreline; or affects the quality of the groundwater.

Environmentally Sensitive Area—An area of environmental importance which is in or adjacent to navigable waters.

Extremely Hazardous Substance—Any substance listed in appendix A or appendix B of 40 CFR 355. Appendix A is an alphabetical listing of extremely hazardous substances. Appendix B lists extremely hazardous substances in order of each substance's Chemical Abstracts Service registry number.

Facility—For emergency planning purposes, the term "facility" in 40 CFR 355, as it applies to the Air Force, is considered equivalent to an "installation." Facility, in 29 CFR 1910.119(b), means the buildings, containers or equipment which contains a process.

Fish and Wildlife and Sensitive Areas—Areas identified by either legal designation or by evaluations of area committees (for planning) or members of the Federal On-Scene Coordinator's spill response structure (during responses). These areas include wetlands, national and state parks, critical habitats for endangered/threatened species, wilderness and natural resource areas, marine sanctuaries and estuarine reserves, conservation areas, preserves, wildlife areas, wildlife refuges, wild and scenic rivers, recreational areas, national forests, Federal and state lands that are research national areas, heritage program areas, land trust areas, and historical and archeological sites and parks. These areas may include unique habitats such as: aquaculture sites and agricultural surface water intakes, bird nesting areas, critical biological resource areas, designated migratory routes, and designated seasonal habitats [40 CFR Part 112.2].

Fugitive or Non-Point Air Emissions—All releases to air except through stacks, vents, ducts, pipes, or other confined air streams. Included: 1) fugitive equipment leaks from valves, pump seals, flanges, compressors, sampling connections, open-ended lines, etc.; 2) evaporative losses from surface impoundments and spills; 3) releases from building ventilation systems; and 4) all other non-point air emissions.

Hazard Identification—The first step in the Hazards Analysis process where facilities handling, storing or disposing of hazardous materials above specific screening levels are identified.

Hazardous Chemicals—Those chemicals which OSHA requires a Material Safety Data Sheet (MSDS) under the *Hazard Communication* standard (29 CFR 1910.1200) because they are either physical or health hazards.

Hazardous Materials—Many definitions and descriptive names are used for the term hazardous materials. For purposes of this document, hazardous materials include hazardous materials, hazardous chemicals, hazardous substances, petroleum (oils), natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals.

Hazardous Materials Pharmacy—The HMP is a concept for managing hazardous materials cradle to grave on AF installations.

Hazardous Substance—Any substance designated under Section 311 (b)(2)(A) of the Clean Water Act; and CERCLA reportable substance; any hazardous waste; any toxic pollutant listed under Section 307 (a) of the Clean Water Act, e.g. NPDES effluent limits and any TSCA imminently hazardous chemical substance or mixture, e.g. PCBs; and any substance listed in 40 CFR 302, table 302.4. (The OSHA 29 CFR 1910.120 definition of hazardous substances differs; EPA uses the term for chemicals which, if released into the environment above a certain amount, must be reported.)

Hazardous Waste—EPA uses the term hazardous wastes for chemicals that are regulated under RCRA (40 CFR Part 261.33). EPA assigned four characteristics as the criteria for determining whether a waste is hazardous. They are ignitability, corrosivity, reactivity, and toxicity. Hazardous wastes in transportation are regulated by DoT (49 CFR Parts 171-179).

Hazards Analysis—Used to obtain a clear understanding of what hazards exist and what risk they pose to people, property, missions, and the environment. It consists of determining where hazards are likely to exist, what places would most likely be adversely affected, what hazardous materials could be involved, and what conditions might exist during a spill or release. This section also assesses the probability of damage or injury. The information developed in a hazards analysis provides the basis for establishing priorities and subsequent planning and also provides the documentation to support hazardous materials planning and response efforts. The three steps associated with hazards analysis are: Hazard Identification, Vulnerability Analysis, and Risk Analysis.

HAZMAT Response Team—Administrative term used to identify installation personnel assigned and trained to the appropriate level. The purpose of this team is to respond to HAZMAT incidents to prevent or reduce human injury or death, property damage, product loss and environmental damage.

HAZMAT—All hazardous materials, hazardous substances, hazardous chemicals, petroleum (oils), natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals including hazardous waste.

IDLH—Immediately Dangerous to Life and Health; atmospheres in which death or irreversible health implications are expected within 30 minutes of exposure.

Level of Concern—The concentration of an extremely hazardous substance (EHS) in the air above which there may be serious irreversible health effects or death as a result of a single exposure for a relatively short period of time.

Local Emergency Planning Committee—A committee established by the state commission for each emergency planning district to plan and coordinate local emergency response actions.

Major Installation—In the Air Force, a self-supporting center of operations for actions of importance to Air Force combat, combat support, or training. It is operated by an active, reserve, or guard unit of group size or larger with all land, facilities and organic support needed to accomplish the unit mission. It must have real property accountability through ownership, lease, permit, or other written agreement for all real estate and facilities. Agreements with foreign governments which give the Air Force jurisdiction over real property meet this requirement. Shared use agreements (as opposed to joint use agreements where the Air Force owns the runway) do not meet the criteria to be major installations. This category includes Air Force bases, air bases, air reserve bases, and Air Guard bases.

Material Safety Data Sheet—A compilation of information required under the OSHA Hazard Communication Standard on the identity of hazardous chemicals, health and physical hazards, exposure limits and precautions. Federal Standards are cited in Federal Standard 313.

Maximum Extent Practicable—Is defined by three different regulations derived from OPA 90:

1) The planned capability to respond to a worst case discharge in adverse weather, as contained in the response plan that meets the criteria of 33 CFR Part 154, Subpart F, or in a specific plan approved by the cognizant Captain of the Port [33 CFR Part 154.1020].

2) The limitations used to determine oil spill planning resources and response times for on-water recovery, shoreline protection, and clean-up for worst case discharges from onshore non-transportation related facilities in adverse weather [40 CFR Part 112.2].

3) The limits of available technology and the practical and technical limits on a pipeline operator in planning the response resources required to provide the on-water recovery capability and the shoreline protection and cleanup capability to conduct response activities for a worst case discharge from a pipeline in adverse weather [49 CFR Part 194.5].

Maximum Most Probable Discharge—This definition is agency (EPA, DoT, and USCG) dependent and the appropriate definitions are detailed as follows: 1) For regulated facilities, a discharge greater than 2,100 gallons and less than or equal to 36,000 gallons, or 10 percent of the capacity of the largest tank at the facility, whichever is less. [40 CFR Part 112 App. E 4.1] 2) For Marine Oil Transfer Facilities, a discharge of the lesser of 1,200 barrels or 10% of the volume of a worst case scenario discharge [33 CFR 154.1020]. 3) For pipelines, the size of the discharge as defined in 49 CFR Part 194.

Mitigation System—Specific equipment, substances or personnel designed or deployed to mitigate an accidental release; examples include water curtain sprays, foam suppression systems, and emergency response teams.

Mixture—Any combination of two or more chemicals, if the combination is not, in whole or in part, the result of a chemical reaction. A mixture also includes any combination which consists of a chemical and associated impurities. If the chemical combination was produced by a chemical reaction but could have been produced without a chemical reaction, it is also treated as a mixture.

Navigable Waters— The waters of the United States, including the territorial seas.

Off-site—Areas beyond the property boundary of the stationary source or areas within the property boundary to which the public has routine and unrestricted access.

Oil—Oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, vegetable oil, animal oil, sludge, oil refuse, oil mixed with wastes other than dredged spoil.

On-Scene Commander—The person designated to coordinate the rescue efforts at the rescue site (Joint Publication 1-02). The senior member, normally the installation or combat support group commander, of the disaster control group. All disaster response force members at an accident scene are under the command and control of the on-scene commander. During a HAZMAT incident response where the Disaster Control Group is activated, all disaster response force members are under the command and control of the OSC. The senior fire official will serve as the OSC until a designated OSC arrives and is briefed on the situation. Under 40 CFR 300, the National Contingency Plan, the term OSC designates a federal on scene coordinator. Because DoD provides their own coordinator, the on-scene commander fills this role.

Operator—A person who owns or operates onshore oil pipeline facilities.

Owner or Operator—Any person who owns, leases, operates, or controls a stationary source.

PCB—Any chemical substance or combination of substances that contains 50 ppm or greater of PCBs.

Pipeline—All parts of an onshore pipeline facility through which oil moves including, but not limited to, line pipe, valves, and other appurtenances connected to line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks.

Process—Any activity involving a highly hazardous chemical or regulated substance including any use, storage, manufacturing, handling, or on-site movement of such substances, or combination of these activities *For 29 CFR Part 1910.119(b) and any group of vessels that are interconnected, or separate vessels that are located such that all regulated substance vessels could be involved in a potential release, shall be considered a single process* [29 CFR 1910.119(b)].

Qualified Individual—The person required by the Oil Pollution Act of 1990 who has the full authority, including contracting authority, to implement removal actions.

Regulated Substance—Any substance listed pursuant to section 112(r)(3) of the Clean Air Act as amended, in 40 CFR 68.130 [40 CFR 68.3].

Release—Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles) of any hazardous chemical, extremely hazardous substance, or toxic chemical.

Reportable Quantity—For any hazardous substance, the reportable quantity is that listed in the "Final RQ" column of table 302.4 in 40 CFR 302. For an EPCRA extremely hazardous substance, the reported quantity is that listed in the "Reportable Quantity" column of Appendix A or Appendix B in 40 CFR 355.

Response Activities—The containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to the environment.

Response Plan—The operator's core plan and the response zone appendices for responding, to the maximum extent practicable, to a worse case discharge of oil, or the substantial threat of such a discharge.

Response Resources—The personnel, equipment, supplies, and other resources necessary to conduct response activities.

Risk Analysis—The third phase in the Hazards Analysis Process which assesses the likelihood of an accidental release of a hazardous material and the consequences that might result, based on the estimated vulnerable zones. The analysis is based on the history of previous incidents, experience at the installation, and the best available information.

Risk Management—The effective use of available resources (i.e. time, manpower, and funding) to prioritize and complete actions required to reduce risk, either through preventive actions or increased response capability.

Screening Quantity—Quantities of hazardous materials to be identified and evaluated by the planning team.

Significant Accidental Release—Any accidental release of a regulated substance that has caused or has the potential to cause off-site consequences such as death, injury, or adverse effects to human health or the environment or to cause the public to shelter-in-place or be evacuated to avoid such consequences.

SPCC Plan—Document required by 40 CFR Part 112.3 that details the equipment, manpower, procedures, and steps to prevent, control, and provide adequate countermeasures to an oil spill; a written description of the facility's compliance with 40 CFR Part 112.

Specific Gravity—Weight of a material compared to the weight of an equal volume of water; water equals 1. Anything less than 1 will float on water; anything greater than 1 will sink in water.

Storage Capacity—The total capacity of a tank or container, whether the tank or container is filled with oil or a mixture of oil and other substances.

Threshold Planning Quantity (TPQ)—For any extremely hazardous substance, the quantity listed in the "Threshold Planning Quantity" column in Appendix A or Appendix B of 40 CFR 355.

Threshold Quantity—Quantity specified for regulated substances under section 112(r)(5) of the Clean Air Act as amended, and listed in 40 CFR 68.130 and determined to be present at a stationary source as specified in 40 CFR 68.115.

Threshold—Quantities used to determine the need to report for specific chemicals under EPCRA.

Tier I and II—EPCRA Section 312 inventory reporting forms for hazardous chemicals on-site above specific thresholds. Reports are due March 1 for maximum and average inventory of chemicals in the previous calendar year.

Toxic Chemical—A chemical or chemical category listed in 40 CFR 372.65 pursuant to EPCRA Toxic Chemical Release Reporting. Community Right-To-Know. These chemicals whose total emissions or releases must be reported annually by owners and operators of certain facilities that manufacture, process, or otherwise use a listed toxic chemical.

Under-ground Storage Tank—A single tank or combination of tanks including associated under-ground pipes that is 10% or more beneath the surface of the ground. Excludes storage tanks in under-ground areas if the storage tank is situated upon or above the floor surface as in basements or tunnels.

Vapor Density—Weight of a pure vapor or gas compared to the weight of an equal volume of dry air at same temperature and pressure; air equals 1; anything less than 1 will be lighter than air; anything greater than 1 will be heavier than air.

Vessel—Any reactor, tank, drum, barrel, cylinder, vat, kettle, boiler, pipe, hose, or other container. Vessel, under the NCP, means watercraft used for transportation on water [40 CFR 68.3].

Vulnerability Analysis—The second step in the Hazards Analysis process which assesses the areas potentially affected by the release of a hazardous material, including on and off the installation; includes gathering information on the extent of the vulnerable zone, conditions that influence the zone, size and type of population within the zone, missions and critical systems that may be impacted, property that might be damaged, and the environment that might be affected.

Vulnerable Zone A—n area over which the airborne concentration of a chemical involved in an accidental release could reach the level of concern (LOC) or for liquid releases, the area which could be impacted by a HAZMAT spill.

Wetlands—Areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as slough, prairie potholes, wet meadows, prairie overflows, mudflats, and natural ponds.

Worst-case Discharge—This term is usually used in the context of water quality control regulations and refers to a scenario which is theorized and evaluated in order to determine the greatest amount of harm to people and/or the environment that could occur upon the discharge of oil or a hazardous substance.

Worst-case Release—This term is often used in the context of air quality control regulations and refers

to a scenario which is theorized and evaluated in order to determine the greatest amount of harm to people and/or the environment that could occur upon the emission of a hazardous substance. This scenario assumes that all the regulated substance in the process is instantaneously released and all mitigation systems fail to minimize the consequences of the release.

Attachment 2

PROCESS HAZARD ANALYSIS METHODS

What-if. For relatively uncomplicated processes, review the process from raw materials to product. At each handling or processing step, "what if" questions are formulated and answered, to evaluate the effects of component failures or procedural errors on the process.

Checklist. For more complex processes, the "what if" study can be best organized through the use of a "checklist," (use AF Form 2519, All Purpose Checklist) and assigning certain aspects of the process to the committee members having the greatest experience or skill in evaluating those aspects. Operator practices and job knowledge are audited in the field, the suitability of equipment and materials of construction is studied, the chemistry of the process and the control systems are reviewed, and the operating and maintenance records are audited. Generally, a checklist evaluation of a process precedes use of the more sophisticated methods described below, unless the process has been operated safely for many years and has been subjected to periodic and thorough safety inspections and audits.

What-If/Checklist. The what-if/checklist is a broadly based hazard assessment technique that combines the creative thinking of a selected team of specialists with the methodical focus of a prepared checklist. The result is a comprehensive hazard analysis that is extremely useful in training operating personnel on the hazards of the particular operation.

The review team is selected to represent a wide range of production, mechanical, technical, and safety disciplines. Each person is given a basic information package regarding the operation to be studied. This package typically includes information on hazards of materials, process technology, procedures, equipment design, instrumentation control, incident experience, and previous hazards reviews. A field tour of the operation also is conducted at this time.

The review team methodically examines the operation from receipt of raw materials to delivery of the finished product to the customer's site. At each step, the group collectively generates a listing of "what-if" questions regarding the hazards and safety of the operation. When the review team has completed listing its spontaneously generated questions, it systematically goes through a prepared checklist to stimulate additional questions. Subsequently, answers are developed for each question. The review team then works to achieve a consensus on each question and answer. From these answers, a listing of recommendations is developed specifying the need for additional action or study. The recommendations, along with the list of questions and answers, become the key elements of the hazard assessment report.

Hazard and Operability Study (HAZOP). HAZOP is a formally structured method of systematically investigating each element of a system for all of the ways in which important parameters can deviate from the intended design conditions to create hazards and operability problems. The hazard and operability problems are typically determined by a study of the piping and instrument diagrams (or plant model) by a team of personnel who critically analyze effects of potential problems arising in each pipeline and each vessel of the operation.

Pertinent parameters are selected, for example, flow, temperature, pressure, and time. Then the effect of deviations from design conditions of each parameter is examined. A list of key words, for example, "more of," "less of," "part of," are selected for use in describing each potential deviation.

The system is evaluated as designed and with deviations noted. All causes of failure are identified. Existing safeguards and protection are identified. An assessment is made weighing the consequences, causes, and protection requirements involved.

Failure Mode and Effect Analysis (FMEA). The FMEA is a methodical study of component failures. This review starts with a diagram of the operation, and includes all components that could fail and conceivably affect the safety of the operation. Typical examples are instrument transmitters, controllers, valves, pumps, rotometers, etc. These components are listed on a data tabulation sheet and individually analyzed for the following:

- Potential mode of failure, (i.e., open, closed, on, off, leaks, etc.)
- Consequence of the failure; effect on other components and effects on whole system
- Hazard class, (i.e., high, moderate, low)
- Probability of failure
- Detection methods
- Remarks/compensating provisions

Multiple concurrent failures also are included in the analysis. The last step in the analysis is to analyze the data for each component or multiple component failure and develop a series of recommendations appropriate to risk management.

Fault Tree Analysis. A fault tree analysis can be either a qualitative or a quantitative model of all the undesirable outcomes, such as a toxic gas release or explosion, that could result from a specific initiating event. It begins with a graphic representation (using logic symbols) of all possible sequences of events that could result in an incident. The resulting diagram looks like a tree with many branches listing the sequential events (failures) for different independent paths to the top event. Probabilities (using failure rate data) are assigned to each event and then used to calculate the probability of occurrence of the undesired event. This technique is particularly useful in evaluating the effect of alternative actions on reducing the probability of occurrence of the undesired event.

An Equivalent Methodology. A similar or related methodology accomplishing the evaluation objectives previously described.

Attachment 3

HAZMAT PLAN REGULATORY CROSS-REFERENCE

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
1	Introduction	Certified by a Registered Professional Engineer	40 CFR 112.3(d)
		Storm Water Pollution Prevention Plan (SWP3) Certification	NPDES General Permit for Storm Water Associated with Industrial Activity, Par IV.B. and VII.G.1.d.
		SWP3 EPCRA Section 313 Water Priority Chemicals-Engineering Certification	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.7.b.(10)
		Table of Contents	*NRT-1, Planning Element A.1NRT-1A, Section 4.0*
		Introduction	*NRT-1, Section 5.1*
1a	Emergency Action Plan	Emergency Response Action Plan	40 CFR 112.20(h)(l) 40 CFR 112, App F, 1.1
		Incident Information Summary	NRT-1, Planning Element A.1 NRT-1A, Section 1.0
1b	Telephone Roster	Pre-Emergency Planning and Coordination With Outside Parties	29 CFR 1910.120(q)(2)9I) 29 1910.120(p)(8)(ii)(A)
		Responsible Persons to Receive Notification	40 CFR 109.5(b)(2)
		Organizations and Agencies to be Notified	40 CFR 109.5(b)(2)
		Requesting Assistance	40 CFR 109.5(b)(4)
		National Response Center	40 CFR 110.10
		Emergency Response Information - Notification	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.1
		Notice of Discharge of a Reportable Quantity	40 CFR 117.21 40 CFR 302.6
		RCRA - Notification	40 CFR 262.34(d)(5)(iv)(C) 40 CFR 264/265.56(d)
		RCRA - Emergency Coordinator List	40 CFR 262.34(d)(5)(i) 40 CFR 264/265.52(d)

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Emergency Notification Procedures	SARA Title III, Sections 301-303 and Section 304 40 CFR 300.300(b) & 405(b) 40 CFR 355.40
		Bulk Oil Transport - Persons or Agencies to be Contacted	49 CFR 130.31(a)(4)
1b	Telephone Roster (cont'd)	Oil Pipeline Response Plan Immediate Notification Procedures; Name, Address, and Telephone Number of Oil Spill Response Organization; and Federal, State, and Local Agencies	49 CFR 194.107(d)1(ii),(iv), & (vi)
		Emergency Assistance Telephone Roster	*NRT-1, Planning Element BNRT-1A, Section 10.0*
		Notification Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items N1-N7*
1c	Mission Statement		
1d	Legal Authority and Responsibility for Responding	Management Approval and Support DoD Responsibility	40 CFR 112.3(a) 40 CFR 112.7 40 CFR 300.175(b)(4)
		Legal Authority and Responsibility for Responding	*NRT-1, Planning Element A.3NRT-1A, Section 3.0*
		Criteria for Assessing State and Local Preparedness: Authority	*NRT-1, Appendix D, Section C.2.2*
1e	Abbreviations and Definitions	Definitions	40 CFR 112, App F, 3.0
		Acronyms	40 CFR 112, App F, 3.0
		Abbreviations and Definitions	*NRT-1, Planning Element A.5* *NRT-1A, Section 4.0*
1f	Assumptions/ Environmental Setting	Facility Information	40 CFR 112.20(h)(2) 40 CFR 112, App F, 1.2
		Largest Oil Release Resources Can Handle	40 CFR 112, App F, 1.3.2
		Site Topography, Layout, and Prevailing Weather Conditions	29 CFR 1910.120(p)(8)(iv)(A)(1)
		Assumptions/Planning Factors	*NRT-1, Planning Element A.6* *NRT-1A, Section 6.0*

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
1g	Concept of Operations • Governing Principles • Organizational Roles and Responsibilities • Relationship to Other Plans	Personnel Roles, Lines of Authority, Training, and Communication Emergency Response Plan Compatible with Other Response Plans Define Authorities, Responsibilities, and Duties of All Persons, Organizations, and Agencies	29 CFR 1910.120(q)(2)(ii) 29 CFR 1910.120(p)(8)(ii)(B) 29 CFR 1910.120(p(8)(iv)(B) 40 CFR 109.5(a)
		Discharge Response Coordinator	40 CFR 109.5(d)(2)
1g	Concept of Operations (cont'd)	National Contingency Plan, Area Contingency Plans, and Local Emergency Response Plan	40 CFR 112.20(g)(1)
		Pollution Prevention Team	NPDES General Permit for Storm Water Associated with Industrial Activity, Par IV.D.1.
		Storm Water Pollution Prevention Plan - Consistency with Other Plans	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.6.
		Best Management Practices (BMP)	40 CFR 125, Subpart K
		BMP - Spill Control Committee	40 CFR 125.104(b)(4)(iii)(B)
		RCRA - Emergency Coordinator	40 CFR 262.34(d)(5)(i) 40 CFR 264/265.52(d) & 55
		RCRA - Contingency Plan	40 CFR 264/265, Subpart D
		Designation of Community Coordinator and Facility Coordinator(s) to Implement the Plan	SARA Title III, Section 303(c)(3) 40 CFR 300.215(b) & (c)(3) 40 CFR 355.30(b) & (c)
		Community Right-to-Know	SARA Title III, Sections 311-312 40 CFR 370
		Bulk Oil Transport Response Organizations or Agencies	49 CFR 130.31(a)(3)
		Oil Pipeline Response Plan Consistent with National Contingency Plan and Area Contingency Plan	49 CFR 194.107(c)
		Concept of Operations	*NRT-1, Planning Element A.7* *NRT-1A, Section 7.0*

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Criteria for Assessing State and Local Preparedness: Organizational Structure	*NRT-1, Appendix D, Section C.2.3*
1h	Instructions on Plan Use • Purpose • Plan Distribution	Emergency Planning and Response Emergency Response Plan	29 CFR 1910.119(n) 29 CFR 1910.120(q)(1) 29 CFR 1910.120(p)(8)(i)
		Permit-Required Confined Space Program	29 CFR 1910.146
		Oil Spill Contingency Plan	40 CFR 109.5
		Spill Prevention, Control, and Countermeasures (SPCC) Plan	40 CFR 112.3(a)
		Facility Response Plan	40 CFR 112.20(a)
1h	Instructions on Plan Use (cont'd)	National Contingency Plan, Area Contingency Plans, and Local Emergency Response Plan	40 CFR 112.20(g)(1)
		Storm Water Pollution Prevention Plan	NPDES General Permit for Storm Water Associated with Industrial Activity
		BMP-Reflect SPCC Requirements	40 CFR 125.104(b)(4)(i)
		BMP - Reflect RCRA Requirements	40 CFR 125.104(b)(4)(ii)
		BMP - Statement of Policy	40 CFR 125.104(b)(4)(iii)(A)
		RCRA - Copies of Contingency Plan	40 CFR 264/265.53
		Bulk Oil Pipeline Response Plan	49 CFR 130
		Oil Pipeline Response Plan	49 CFR 194.107
		Instructions on Plan Use	*NRT-1, Planning Element A.8* *NRT-1A, Section 8.0*
		Criteria for Assessing State and Local Preparedness: Emergency Plan	*NRT-1, Appendix D, Section 2.6*
1i	Record of Amendments	*Records of Amendments*	*NRT-1, Planning Element A.9* *NRT-1A, Section 9,0*
2	Hazards Analysis1	Emergency Planing and Response	29 CFR 1910.119(n)
		Pre-Emergency Planning and Coordination With Outside Parties	29 CFR 1910.120(q)(2)(i) 29 CFR 1910.120(p)(8)(ii)(A)
		Hazard Evaluation	40 CFR 112.20(h)(4) 40 CFR 112, App F, 1.4
		Hazards Analysis	*NRT-1, Section 3.3*

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Criteria for Assessing State and Local Preparedness: Hazards Analysis	*NRT-1, Appendix D, Section C.2.1*
		Hazards Analysis (Summary)	*NRT-1, Planning Element G*
		Hazards Analysis	*Technical Guidance for Hazards Analysis, Section 1.4*
		Initial Screening to Set Priorities Among Sites	*Technical Guidance for Hazards Analysis, Section 3.1*
		Reevaluation; Planning for Facilities by Priority	*Technical Guidance for hazards Analysis, Section 3.2*
		Using the Results of a Hazards Analysis	*Technical Guidance for Hazards Analysis, Section 4*
		Information Collection to Evaluate Sites for Emergency Planning	*Technical Guidance for Hazards Analysis, Appendix I*
		Methods for Evaluating Hazards Used by Facilities	*Technical Guidance for Hazards Analysis, Appendix J*
2	Hazards Analysis (cont'd)	*Evaluation Guide for Available Computer Applications Addressing Hazardous Materials Emergency Response Planning*	*Technical Guidance for Hazards Analysis, Appendix K*
		Overview of Hazards Analysis Process	*Handbook of Chemical Hazards Analysis Procedures, Chapter 9.0*
2a	Hazards Identification	Process Safety Information	29 CFR 1910.119(d)
		Identify Permit-Required Confined Spaces	29 CFR 1910.146(c)
		Hazard Identification	40 CFR 112.20(h)(4) 40 CFR 112, App F, 1.4.1
		SWP-3 Risk Identification and Summary of Potential Pollutant Sources	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.2.e.
		SWP3 EPCRA Section 313 Water Priority Chemicals	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.7 and Addendum B
		BMP - Examine Facility Components or Systems for Release Potential	40 CFR 125.104(b)(2)(i)
		BMP - Material Inventory	40 CFR 124.104(b)(4)(iii)(C)

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Identification of Facilities and Extremely Hazardous Substances Transportation Routes	SARA Title III, Section 303 40 CFR 300.215(c)(1)
		PCB Locations	40 CFR 761.30 & 40
		Identify Oil Pipelines Which require Response Plans - Incident Information Summary	49 CFR 194.101 & 103 49 CFR 194.107(d)(1(i) & 113
		Hazards Identification	*Technical Guidance for Hazards Analysis, Section 2.1*
		Hazard Identification Guidelines	*Handbook of Chemical Hazards Analysis Procedures, Chapter 10.0*
2b	Vulnerability Analysis	Process Hazards Analysis	29 CFR 1910.119(e)
		Critical Water Use Areas	40 CFR 109.5(b)(1)
		Spill Potential Quantities and Predicted Pathways	40 CFR 112.7(b)
		Substantial Harm Determination	40 CFR 112.20(f)
		No Substantial Harm Certification Vulnerability Analysis	40 CFR 112.20(e) 40 CFR 112.20(h)(4) 40 CFR 112, App F, 1.4.2
2b	Vulnerability Analysis (cont'd)	Tiered Planning Discharge Scenarios	40 CFR 112.20(h)(5) 40 CFR 112, App E 40 CFR 112, App F, 1.5
		SWP3 - Site Drainage and Flow Prediction	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.2.a.
		BMP - Predict Direction, Rate, and Total Quantity of Potential Releases	40 CFR 125.104(b)(2)(ii)
		BMP - Material Compatibility	40 CFR 125.104(b)(4)(iii)D)
		Methods for Determining the Occurrence of a Release and the Probable Affected Area	SARA Title III, Section 303(c)(5)
		BulkOil Transport Maximum Discharge Potential	49 CFR 130.31(a)(2)
		Worst Case Discharges for Oil Pipelines	49 CFR 194.105
		Vulnerability Analysis	*Technical Guidance for Hazards Analysis, Section 2.2*

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
2c	Risk Analysis	Material Handling Program	29 CFR 1910.120(p)(6)
		Spill Control Measures	40 CFR 112.7(c)
		Spill Control Measures Impracticable	40 CFR 112.7(d)
		Inspections, Tests, and records	40 CFR 112.7
		Analysis of the Potential for a Spill	40 CFR 112.20(h)(4) 40 CFR 112, App F, 1.4.3
		Facility Spill History	40 CFR 112.20(h)(4) 40 CFR 112, APP F, 1.4.4
		Discharge Detection Systems	40 CFR 112.20(h)(6) 40 CFR 112, App F, 1.6
		Facility Self-Inspection (Tank Inspection	40 CFR 112.20 (h)(8)(i) 40 CFR 112, App F, 1.8.1.1
		Facility Self-Inspection (Secondary Containment Inspection)	40 CFR 112.20(h)(8)(i) 40 CFR 112, App G 1.8.1.3
		Discharge Prevention Meeting Logs	40 CFR 112.20(h)(8)(iv) 40 CFR 112, App F, 1.8.3.2
		SWP3-Spills and Leaks	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.2.d
		SWP3-Sampling Data	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.2.d
2c	Risk Analysis (cont'd)	SWP3-Measures and Controls	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.3
		SWP3 EPCRA Section 313 Water Priority Chemicals`	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.7
		BMP-Establish BMPs to Control Releases	40 CFR 125.104(b)(3)
		BMP-Visual Inspections, Preventive Maintenance, Housekeeping, and Security	40 CFR 125.104(b)(4)(iii)(G-J)
		RCRA-Preparedness and Prevention	40 CFR 264/265, Subpart C 40 CFR 264/265.174 and 195
		UST-Preventive Measures	40 CFR 280.20(c), 30(a), and 40(a)

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Risk Analysis	Technical Guidance for Hazards Analysis, Section 2.3
		Probability Analysis, Consequence Analysis, and Formulation of a Planning Basis	*Handbook of Chemical Hazards Analysis Procedures, Chapters 11.0, 12.0, and 13.0*
3	Capability Assessment	PPE and Emergency Equipment	29 CFR 1910.120(q)(2)(xi) 29 CFR 1910.120(p)(8)(ii)(K)
		Skilled Support Personnel	29 CFR 1910.120(q)(4)
		Specialist Employees	29 CFR 1910.120(q)(5)
		Identify and Inventory Equipment, Materials, and Supplies both Locally and Regionally	40 CFR 109.5(c)(1)
		Estimate Anticipated Equipment, Material, and Supply Needs Based on Maximum Oil Discharge	40 CFR 109.5(c)(2)
		Required Response Resources for Facility Response Plans	40 CFR 112, Appendix F
		Emergency Response Information-Equipment	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.2
		Emergency Response Information-Personnel	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.3
		Description of Community and Industry Emergency Equipment and Facilities, and the Identity of Persons Responsible for Them	SARA Title III, Sections 301-303
3	Capability Assessment (cont'd)	Bulk Oil Transport-Response Organizations and Agencies	49 CFR 130.31(a)(3)
		Oil Pipeline Response Resources	49 CFR 194.115
		Capability Assessment	*NRT-1, Section 3.4*
		Criteria for Assessing State and Local Preparedness: Resources	*NRT-1, Appendix D, Section 2.5*
		Information Collection to Evaluate Sites for Emergency Planning	*Technical Guidance for Hazards Analysis, Appendix I, Section 1.6*
3a	Base Resources	Chemical Protective Clothing	29 CFR 1910.120(q)(10)
		Post-Emergency Response Operations	29 CFR 1910.120 (q)(11)
		RCRA-Emergency Equipment	40 CFR 264/265.32 and 33

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		RCRA-Emergency Equipment Listing	40 CFR 264/265.52(e)
3b	Off-Base Resources	Agreements and arrangements for Equipment, Materials, and Supplies	40 CFR 109.5(c)(3)
		Evidence of Contracts or Other Approved Means	40 CFR 112.20(h)(3)(i-ii)
		RCRA-Arrangements with Local Authorities	40 CFR 264/265.37 and 52(c)
4	Response Functions	Emergency Planning and Response	29 CFR 1910.119(n)
		Emergency Recognition and Prevention	29 CFR 1910.120(q)(2)(iii) 29 CFR 1910.120(p)(8)(ii)(C)
		Emergency Alerting and Response Procedures	29 CFR 1910.120(q)(2)(ix) 29 CFR 1910.120(p)(8)(ii(I)
		Procedures for Handling Emergency Response	29 CFR 1910.120(q)(3) 29 CFR 1910.120 (p)(8)(iv)(F)
		Permit-Required Confined Space Program	29 CFR 1910.146
		Hazard Communication Program	29 CFR 1910.1200(e)
		Specific Actions for Oil Discharge	40 CFR 109.5(d)
		Plan Implementation	40 CFR 112.20(h)(7)(i) 40 CFR 112, App F, 1.7
		Spill Prevention and Response Procedures	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.3.c
		BMP-Specific Objectives for Control of Toxic and Hazardous Pollutants	40 CFR 125.104(b)(2)
4	Response Functions (cont'd)	RCRA-Emergency Procedures	40 CFR 262.34(d)(5)(iv) 40 CFR 264/265.56 40 CFR 264/265.196
		Emergency Response Procedures, On-Site and Off-Site	SARA Title III, Sections 301-303
		Operational Response Phases for Oil Removal	40 CFR 300, Subpart D
		Hazardous Substance Response	40 CFR 300, Subpart E
		PCB Response Actions	40 CFR 761.30 and 40
		Bulk Oil Transport Manner of Response	49 CFR 130.31(a)(1)

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Oil Pipeline Response Spill Detection and Mitigation Procedures	49 CFR 194.107(d)(1)(iii)
		Response Functions	*NRT-1, Planning Element C*
		Response Personnel Safety	*NRT-1, Planning Element C, Function 8* *NRT-1A, Section 18.0*
		Personal Protection Planning Item	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items PP1-PP2*
4a	Initial Notification of Response Agencies	Pre-Emergency Planning and Coordination With Outside Parties	29 CFR 1910.120(q)(2)(i) 29 CFR 1910.120(p)(8)(ii)(A)
		Emergency Alerting and Response Procedures	29 CFR 1910.120(q)(2)(ix) 29 CFR 1910.120(p)(8)(ii)(I)
		Procedures for Reporting Incidents	29 CFR 1910.120(p)(8)(iv)(A)(2)
		Responsible Persons to Receive Notification	40 CFR 109.5(b)(2)
		Organizations and Agencies to be Notified	40 CFR 109.5(b)(2)
		Requesting Assistance	40 CFR 109.5(b)(4)
		National Response Center	40 CFR 110.10
		Emergency Response Information-Notification	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.1
		Discharge Detection Systems	40 CFR 112.20(h)(6) 40 CFR 112, App F, 1.6
		Notice of Discharge of a Reportable Quantity (RQ)	40 CFR 302.6
		BMP-Reporting and Nitrification Procedures	40 CFR 125.104(b)(4)(iii)(F)
4a	Initial Notification of Response Agencies (cont'd)	RCRA-Notification	40 CFR 262.34(d)(5)(iv))(C) 40 CFR 264/265.56(d)
		UST-Notification and Reporting	40 CFR 280.50, 53, and 61-63
		Emergency Notification Procedures	SARA Title III, Sections 301-303 and Section 304 40 CFR 300.300(b) and 405(b) 40 CFR 355.40

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Bulk Oil Transport-Persons or Agencies to be Contacted	49 CFR 130.31(a)(4)
		Oil Pipeline Response Plan Immediate Notification Procedures; Name, Address, and Telephone Number of Oil Spill Response Organization; and Federal, State, and Local Agencies	49 CFR 194.107(d)(1)(ii), (iv), and (vi)
		Initial Notification of Response Agencies	*NRT-1, Planning Element C, Function 1* *NRT-1A, Section 11.0*
		Criteria for Assessing State and Local Preparedness: Communication	*NRT-1, App D, Section 2.4*
		Notification Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items N1-N7*
4b	Direction and Control	Personnel Roles, Lines of Authority, Training, and Communication	29 CFR 1910.120(q)(2)(ii) 29 CFR 1910.120(p)(8)(ii)(B)
		Define Authorities, Responsibilities, and Duties of All Persons, Organizations, and Agencies	40 CFR 109.5(a)
		Discharge Response Coordinator	40 CFR 109.5(d)(2)
		Duties of Emergency Response Coordinator	40 CFR 112.20(H)(3)(ix) 40 CFR 112, App F, 1.3.5
		RCRA-Emergency Coordinator's Duties	40 CFR 262.34(d)(5)(iv) 40 CFR 264/265.56 40 CFR 264/265.196
		On-Scene Coordinators	40 CFR 300.120(b)
		Designation of Community ?Coordinator and Facility Coordinator(s) to Implement the Plan	SARA Title III, Section 303 (c)(3)
		Direction and Control	*NRT-1, Planning Element C, Function 2* *NRT-1A, Section 12.0*
		Command Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items CCi, CC3, and CC$*

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
4c	Communication (Among Responders)	Personnel Roles, Lines of Authority, Training, and Communication	29 CFR 1910.120(q)(2)(ii) 29 CFR 1910.120(P)(8)(ii)(B)
		Response Operations Center	40 CFR 109.5(d)(3)
		Communication (Among Responders)	*NRT-1, Planning Element C, Function 3 NRT-1A, Section 13.0*
		Criteria for Assessing State and Local Preparedness: Communication	*NRT-1, App D, Section 2.4*
		Communication Planning Item	*Handbook or Chemical Hazards Analysis Procedures, Chapter 14.0, Item CC2*
4d	Warning Systems and Emergency Public Notification	Safe Distances and Places of Refuge	29 CFR 1910.120(q)(2)(iv) 29 CFR 1910.120(p)(8)(ii)(D)
		Evacuation Routes and Procedures	29 CFR 1910.120(q)(2)(vi)
		Employee Alarm System	29 CFR 1910.120(p)(8)(iv)(E)
4d	Warning Systems and Emergency Public Notification (cont'd)	Emergency Response Information-Evacuation Plans	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.5
		RCRA-Communication or Alarm Systems	40 CFR 264/265.32(a) and 34
		RCRA-Evacuation of Local Areas	40 CFR 264/265.56(d)
		Emergency Notification Procedures	SARA Title III, Sections 301-303 and Section 304
		Warning Systems and Emergency Public Notification	*NRT-1, Planning Element C, Function 4* *NRTC-1A, Section 14.0*
		Criteria for Assessing State and Local Preparedness: Communication	*NRT-1, App D, Section 2.4*
		Evacuation Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Item EV3*
4e	Public Information/ Community Relations	Safe Distances and Places of Refuge	29 CFR 1910.120(q)(2)(iv) 29 CFR 1910.120(p)(8)(ii)(D)
		Evacuation Routes and Procedures	29 CFR 1910.120(q)(2)(vi) 29 CFR 1910.120(p)(8)(ii)(F)

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Community Right-to-Know	SARA Title III, Sections 311-312 40 CFR 370
		Public Information/Community Relations	*NRT-1, Planning Element C, Function 5* *NRT-1A, Section 15*
		Criteria for Assessing State and Local Preparedness: Communication	*NRT-1, Appendix D, Section 2.4*
		Public Relations Planning Item	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Item PRI*
4f	Resource Management (Including Training)	Personnel Roles, Lines of Authority, Training and Communication	29 CFR 1910.120 (q)(2)(ii) 29 CFR 1910.120(P)(8)(ii)(B)
		PPE and Emergency Equipment	29 CFR 1910.120 (q)(2)(xi) 29 CFR 1910.120 (P)(8)(ii)(K)
		Training	29 CFR 1910.120(q)(6-8) 29 CFR 1910.120(p)(7) and (p)(8)(iii)
		Chemical Protective Clothing	29 CFR 1910.120(q)(10)
		Confined Space Training	29 CFR 1910.146(g)
		Hazard Communication Training	29 CFR 1910.1200(h)
		Chemical Hygiene Plan Training	29 CFR 1910.1450(f)
		Agreements and Arrangements for Equipment, Materials, and Supplies	40 CFR 109.5(c)(3)
		Oil Discharge Response Team	40 CFR 109.5(c)(3)
		Emergency Response Information-Equipment (Testing)	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.3
		Response Resources for Small, Medium, and Worst Case Spills	40 CFR 112.20(h)(7)(ii) 40 CFR 112, App F, 1.8.1.2
		Facility Self-Inspection (Response Equipment Inspection)	40 CFR 112.20(h)(8)(i) 40 CFR 112, App F, 1.8.3.1
		Personnel Training Logs	40 CFR 112.20(H)(8)(iv) 40 CFR 112, App F, 1.8.3.1
		SWP3 EPCRA Section 313 Water Priority Chemicals-Training	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.7.b.(9)
		BMP-Employee Training	40 CFR 125.104(b)(4)(iii)(E)
		RCRA-Personnel Training	40 CFR 262.34(d)(5)(iii) 40 CFR 262/265.16

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		RCRA-Equipment	40 CFR 264/165.32, 33, and 52(e)
	‘	Description and Schedules of a Training Program for Emergency Response to Chemical Emergencies	SARA Title III, Sections 301-303
		DoT HAZMAT Training	49 CFR 172, Subpart H and 177.816
		Oil Pipeline Training	49 CFR 194.117
		Resource Management	*NRT-1, Planning Element C, Function 6* *NRT-1A, Section 16.0*
		Criteria for Assessing State and Local Preparedness: Resources	*NRT-! App D, Section 2.5*
		Training	*NRT-1A, Section 29.0*
4f	Resource Management (Including Training) (cont’d)	*Maintenance of Apparatus and Equipment Planning Item*	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Item SC8*
		Training Planning Item	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Item TR1*
4g	Medical Support	Emergency Medical Treatment and First Aid	29 CFR 1910.120(q)(2)(viii) 29 CFR 1910.120(p)(8)(ii)(H)
		PPE and Emergency Equipment	29 CFR 1910.120 (q)(2)(xi) 29 CFR 1910.120(p)(8)(ii)(K)
		Medical Surveillance and Consultation	29 CFR 1910.120(q)(9) 29 CFR 1910.120(p)(3)
		RCRA-Arrangements with Local Authorities	40 CFR 264/265.37(a)(4)
		Health and Medical	*NRT-1, Planning Element C, Function 7* *NRT-1A, Section 17.0*
		Health Care Planning Item	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items HC1-HC2*
4h	Environmental Management	Air Monitoring	*29 CFR 1910.120(q)(3)(iv)*
		On-going Incident Assessment	*NRT-1, Planning Element C, Function 12* *NRT-1A, Section 23.0*

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Spill Monitoring Planning Item	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items SM1-SM2*
4i	Decontamination Procedures	Decontamination	29 CFR 1910.120(p)(4) 29 CFR 1910.120(p)(8)(ii)(G) 29 CFR 1910.120(q)(2)(vii) 29 CFR 1910.120(1)(3)(ix)
		PPE and Emergency Equipment	29 CFR 1910.120(q)(2)(xi) 29 CFR 1910.120(p)(8)(ii)(K)
		Response Personnel Safety	*NRT-1, Planning Element C, Function 8* *NRT-1A, Section 18.0*
		Decontamination Planning Item	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Item PP3*
4j	Personal Protection of Citizens • Indoor Protection • Evacuation Procedures • Other Public Protection Strategies	Site-Specific Emergency Action Plans Safe Distances and Places of Refuge Site Security and Control	29 CFR 1910.38(a) 29 CFR 1910.120(q)(2)(iv) 29 CFR 1910.120(p)(8)(ii)(D) 29 CFR 1910.120(q)(2)(v) 29 CFR 1910.120(p)(8)(ii)(E)
4j	Personal Protection of Citizens (cont'd)	Evacuation Routes and Procedures	29 CFR 1910.120(q)(2)(vi) 29 CFR 1910.120(p)(8)(ii)(F)
		Prioritize Water Uses to be Protected	40 CFR 109.5(d)(5)
		Emergency Response Information-Evacuation Plans	40 CFR 112.20(h)(3) 40 CFR 112, App F, 1.3.5
		RCRA-Evacuation of Local Areas	40 CFR 264/265.56(d)(1)
		Evacuation Plans	SARA Title III, Section 303(c)(7)
		Personal Protection of Citizens	*NRT-1, Planning Element C, Function 9* *NRT-1A, Section 19.0 and 20.0*
		General Considerations for Evacuation or In-Place Sheltering	*Technical Guidance for hazards Analysis, App H*
		Evacuation Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items EV1-EV2*

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
4k	Fire and Rescue Support	Site Security and Control	29 CFR 1910.120(q)(2)(v)
		Fire and Rescue Support	*NRT-1, Planning Element C, Function 10* *NRT-1A, Section 21.0*
		Fire Response Planning Item	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items FF1-FF2*
4l	Security Police Support	Site Security and Control	29 CFR 1910.120(q)(2)(v) 29 CFR 1910.120(p)(8)(ii)(E)
		Law Enforcement	*NRT-1, Planning Element C, Function 10* *NRT-1A, Section 22.0*
4m	Civil Engineering Support	*Public Works*	*NRT-1, Planning Element C, Function 14* *NRT-1A, Section 25.0*
4n	Other Support Services	*Human Services*	*NRT-1, Planning Element C, Function 13 NRT-1A, Section 24.0*
		Others	*NRT-1, Planning Element C, Function 15*
		Evacuation Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items EV4-EV7*
5	Containment and Cleanup	Emergency Alerting and Response Procedures	29 CFR 1910.120(q)(2)(ix) 29 CFR 1910.120(p)(8)(ii)(I)
		Post-Emergency Response Operations	29 CFR 1910.120(q)(11)
		Specific Actions for Oil Discharge	40 CFR 109.5(d)
		Disposal Plans	40 CFR 112.20(h)(7)(iii) 40 CFR 112, App F, 1.7.2
		Containment and Drainage Planning	40 CFR 112.20(h)(7)(iv) 40 CFR 112, App F, 1.7.3
5	Containment and Cleanup (cont'd)	SWP3-Spill Prevention and Response Procedures	NPDES General Permit for Storm Water Associated with Industrial Activity, PartIV.D.3.c
		RCRA-Recovery and Remediation	40 CFR 262.34(d)(5)(iv)(B) 40 CFR 264/265.56(g) 40 CFR 264/265.196(c)(2)

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Operational Response Phases for Oil Removal	40 CFR 300, Subpart D
		Hazardous Substance Response	40 CFR 300, Subpart E
		PCB Cleanup	40 CFR 761, Subpart G
		Bulk Oil Transport Manner of Response	49 CFR 130.31(a)(1)
		Oil Pipeline Response Spill Detection and Mitigation Procedures	49 CFR 194.107(d)(1)(iii)
		Containment and Cleanup	*NRT-1, Planning Element D* *NRT-1A, Section 26.0*
		Spill Containment and Cleanup, Post-Spill Recovery, and Waste Disposal Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Items SC1-SC7, SR1-SR5, and WD1*
6	Documentation and Investigative Follow-up	Accident/Incident Investigation	29 CFR 1910.119(m)
		Procedures for Reporting Incidents	29 CFR 1910.120(p)(8)(iv))(A)(2)
		Critique of Response and Follow-up	29 CFR 1910.120(q)(2)(x) 29 CFR 1910.120(p)(8)(ii)(J)
		Recovery of Damages and Enforcement Measures	40 CFR 109.5(e)
		Report to EPA Regional Administrator and State Due to Oil Release	40 CFR 112.4
		Notice of Discharge of a Reportable Quantity (RQ)	40 CFR 117.21 40 CFR 302.6
		SWP3-Recordkeeping and Internal Reporting Procedures	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.3.f
		RCRA-Notification and Reporting	40 CFR 264/265.196(d)
		UST-Notification and Reporting	40 CFR 280.50, 53, and 61-63
		Emergency Notification Procedures	SARA Title III, Sections 301-303 and Section 304 40 CFR 300.300(b) and 405(b) 40 CFR 355.40
		Toxic Chemical Release Reporting	40 CFR 372
6	Documentation and Investigative Follow-up (cont'd)	PCP Notification and Reporting	40 CFR 761.125

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		Documentation and Investigative Follow-up	*NRT-1, Planning Element E* *NRT-1A, Section 27.0*
		Criteria for Assessing State and Local Preparedness: Communication	*NRT-1, App D, Section 2.4*
		Spill Documentation Planning Items	*Handbook of Chemical Hazards Analysis Procedures, Chapter 14.0, Item SD1*
7	Procedures for Testing and Updating the Plan	Safety/Compliance Audits	29 CFR 1910.119(o)
		Site Emergency Response Plan Rehearsed Regularly and Reviewed Periodically	29 CFR 1910.120(p)(8)(iv)(C-D)
		Critique of Response and Follow-up	29 CFR 1910.120(q)(2)(x) 29 CFR 1910.120(p)(8)(ii)(J)
		Report to EPA Regional Administrator and State Due to Oil Release	40 CFR 112.4
		Amendments to SPCC Requirements Due to Facility Changes	40 CFR 112.5(a)
		Review of SPCC Requirements Every Three Years	40 CFR 112.5(b)
		Significant and Substantial Harm Determination, Review, and Approval by EPA Regional Administrator	40 CFR 112.20(c)
		Amendments to Facility Response Plan Requirements Due to Changes	40 CFR 112.20(d)
		Review National Contingency Plan and Area Contingency Plans Annually	40 CFR 112.20(g)(2)
		Update Plan After Spill Event	40 CFR App F 1.2.8
		Mock Alert Drills	40 CFR 112.20(h)(8)(ii)
		Storm Water Pollution Prevention Plan Currency	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.C.
		SWPs-Comprehensive Site Compliance Evaluation	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.4

Plan #	Element	Sub-Elements	Federal Acts, Standards, or Guidance
		SWP3-EPCRA Section 313 Water Priority Chemicals-Engineering Certification	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.7.b(10)
7	Procedures for Testing and Updating the Plan (cont'd)	BMP-Permit Application and Revisions	40 CFR 125.104(c-f)
		RCRA-Amendments to Contingency Plan	40 CFR 264/265.54
		Methods and Schedules for Exercising Emergency Response Plans	SARA Title III, Sections 301-303
		Oil Pipeline Response Plan Review and Update	49 CFR 191.121 49 CFR 194.107(d)(1)(x)
		Oil Pipeline Response Drill Types, Schedules, and Procedures	49 CFR 194.107(d)(1)(ix)
		Procedures for Testing and Updating the Plan	*NRT-1, Planning Element F* *NRT-1A, Section 28.0*
		Plan Appraisal and Continuing Planning	*NRT-1, Chapter 6*
		Developing a Hazardous Materials Exercise Program	*NRT-2*
8	References	Facility Response Plan Cross-Reference	40 CFR 112.20(h)
		Diagrams (Site Plan, Site Drainage Plan, and Site Evacuation Plan)	40 CFR 112.20(h)(9) 40 CFR 112, App F, 1.9
		Response Plan Cover Sheet	40 CFR 112.20(a)(2)(i) 40 CFR 112, App F, 2.0
		References	40 CFR 112, App F, 4.0
		SWP3-Site Drainage Map	NPDES General Permit for Storm Water Associated with Industrial Activity, Part IV.D.2.a
		BMP-Necessary Plat Plans, Drawings, or Maps	40 CFR 125.104(b)(1)
		References	*NRT-1, Planning Element H*

Note 1: The Sub-Elements (column 3) listed HAZMAT Plan Elements in 2, 3, and 4 apply to all sub-sections (e.g., 2a, 2b, etc.) listed under the main HAZMAT Plan Element.

Note 2: Titles of Federal Acts, Standards, and Guidance

29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals

29 CFR 1910.120, Hazardous Waste Operations and Emergency Response

29 CFR 1910.146, Confined Space

40 CFR 68, Risk Management Programs for Chemical Accident Release Potential

40 CFR 109, Criteria for State, Local and Regional Oil Removal Contingency Plans

40 CFR 110, Discharge of Oil

40 CFR 112, Oil Pollution Prevention (SPCC & Facility Response Plans)

40 CFR 117, RQs for Hazardous Substances 40 CFR 125, Criteria and Standards for Best Management Practices (BMP)

49 CFR 130, Oil Spill Prevention and Response Plans (Bulk Oil Transportation, HM-214)

40 CFR 262, Generators of Hazardous Waste

40 CFR 264 & 265, Contingency Plan and Emergency Procedures for Permitted and Interim Status TSDF Standards

40 CFR 280, Technical Standards and Corrective Action Requirements for Owners and Operators of Under-ground Storage Tanks

40 CFR 300, Oil and Hazardous Substance Pollution Contingency Plan (National Contingency Plan)

40 CFR 302, Designation Reportable Quantities (RQs) and Notification Requirements for Hazardous Substances Under CERCLA

40 CFR 355, Emergency Planning and Notification Under CERCLA

40 CFR 372, Toxic Chemical Release Reporting

40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce & Use Prohibitions

49 CFR 130, Oil Spill Prevention and Response Plans (HM-214)

49 CFR 171-178, DoT HAZMAT Regulations (Subpart H, Training for the Safe Transportation of Hazardous Materials)

49 CFR 194, Response Plans for Onshore Oil Pipelines (PS-130)

National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activity (Storm Water Pollution Prevention Plans - SWP3)

NRT-1, Hazardous Materials Emergency Planning Guide (March 1987)

NRT-1A, Criteria for the Review of Hazardous Materials Emergency Plans (May 1988)

NRT-2, Developing a Hazardous Materials Exercise Program (September 1990)

Technical Guidance for Hazards Analysis, Emergency Planning for Extremely Hazardous Substances (December 1987)

Handbook of Chemical Hazards Analysis Procedures

Attachment 4

OBTAINING EPA AND RESPONSE TEAM PUBLICATIONS

PUBLICATION	ORDERING
National Response Team 1 (NRT - 1)	Call the U.S. EPA's RCRA/CERCLA/ EPCRA Information Hotline at (800) 535-0202 between the hours of 8:30 a.m. and 7:30 p.m. Eastern time. In the Washington DC area call (703) 412-9810.
Technical Guidance for Hazards Analysis	Call the U.S. EPA's RCRA/CERCLA/ EPCRA Information Hotline at (800) 535-0202 between the hours of 8:30 a.m. and 7:30 p.m. Eastern time. In the Washington DC area call (703) 412-9810.
Handbook of Chemical Analysis Procedures	Call the U.S. EPA's RCRA/CERCLA/ EPCRA Information Hotline at (800) 535-0202 between the hours of 8:30 a.m. and 7:30 p.m. Eastern time. In the Washington DC area call (703) 412-9810. For additional copies write: Federal Emergency Management Agency Publications Office 500 C. Street SW Washington, DC 20472